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TUBERCULOUS MILK.

BY A. E. MACGILLIVRAY, M.R.C.V.S., BANFF, N.B.

THE subject is important, but almost threadbare. You cannot take up a professional *journal*, either medical, veterinary, or agricultural, but you find "*Tubercle*" staring you in the face; in one form or other it is continually engaging, and almost engrossing, the scientific mind.

Is this necessary? Is the subject worth all these researches, experiments, cultivations, etc.? The answer must be in the affirmative, for, notwithstanding the negative character of certain recent experiments, as chronicled in the pages of the September issue of the VETERINARY JOURNAL, the question is still open, and of most pressing importance, and requires more extensive, more correct, and more carefully conducted experiments than those of Dr. Francis Imlach to satisfactorily settle it either one way or the other.

In a series of experiments, such as those conducted by Dr. Imlach, correctness in every way, even to the slightest minutiæ, is absolutely necessary. I may, therefore, be pardoned for calling attention to his thermometrical observations, which, to my mind, are extremely erroneous, being in fact impossible! In the first cow experimented with, he says the rectal temperature up to within ten days of death continued at 100° F., but during the last ten days of life it rose to 101·5. In the third

cow, "the temperature never rose above from 100·5 to 101; it was doubted during life whether the cow was suffering from true Tubercle." I should rather suppose so, for although as a rule the temperature never rises very high in Tubercle, except in its very acute stages, we must bear in mind that the temperature of the first cow, as recorded by Dr. Imlach, *was actually two degrees below the natural* bovine temperature which, as every practically-experienced man knows, is 102.

These thermometrical observations are thoroughly useless and incorrect, for the good reason that they are impossible. I have made too many observations in bovine tubercular patients not to know all the phases possible in their thermometry; and I submit that Dr. Imlach's thermometry is not only impossible, but misleading.

Here were two cows in a very advanced stage of Tubercle, with their temperatures respectively 101·5 and 101; with which contrast, to quote an authority on Tubercle, the cow referred to in page 185 of Walley's "Four Bovine Scourges," where the temperature was 106·8 in a case of Tubercle; while in numerous cases which have come under my notice during the past summer, the temperature in tuberculous cows has ranged from 103·5 up to 105·5; a very common temperature being 104 F. My assistant, Mr. Charles Cowie, M.R.C.V.S., now located at Ogdensburg, New York, U.S.A., willingly corroborates these figures, having seen a good few of these cases along with me.

Dr. Imlach's reference to the comparative infrequency of Tubercle in juvenile bovines is also contradictory to fact. This, however, need not occasion surprise, when we consider the source of his information, namely, animals "slaughtered in the various abattoirs in Liverpool!" Where, in the name of wonder, is the inducement to any sane man, however grasping he may be, to send a *tuberculous calf* to a public slaughter-house? What surprises me is, that there was even one tuberculous calf (as recorded) discovered in a public abattoir! With older and larger tubercle-infested animals, the inducement to get them into *any sort* of condition for the butcher is great, and easily perceivable. No, no, Dr. Imlach, data culled from the registers of public abattoirs will not do in such an argument as this; you

must go to the dairies and farms, etc., where these youngsters are bred and reared for "future feeding or breeding purposes," to find out the truth about the ravages of Tubercle among bovine juveniles!

Dr. Imlach experimented with three calves. The first calf, he tells us, got three quarts of milk daily from 15th April to 11th May from the *first cow*. Now, we are previously told that this cow's yield of milk "gradually diminished and had almost ceased on 11th May," when she was slaughtered! Whence, then, the *three* quarts per diem to our poor calf? The other two calves got each *two quarts* of milk daily from the second and third tuberculous cows; but were otherwise liberally fed with "boiled oatmeal" and "sweet milk from a healthy cow!" These details, I fearlessly assert, render the doctor's experiments worthless. *Two quarts of milk daily!* Why, the true way to settle the question was to give milk from tuberculous cows in unlimited quantities, namely, just as much as the calves would take. This is what happens (in real bovine life) when a calf is suckled by a tuberculous cow; the juvenile draws away from nature's fountain every hour of the twenty-four.

Talk, then, about two quarts per diem; why, the mère idea is ridiculous! A calf reared away from its mother, by hand or pail, would get at least three or four quarts of milk *three times* a day.

In my opinion, the good folks at "Vienna, New York, and elsewhere," are quite right in endeavouring to stop the sale of milk from tuberculous cows; for in a recent (1884) Report of the German Imperial Board of Health, we find that the mortality from Tubercle is "great in infancy," principally, we suppose, because in infants the tubercular virus finds a decidedly favourable and accommodating nidus, where it can "run riot," and accomplish the ruin of its host in a short period. It need scarcely be observed that juveniles (whether human or bovine) are the chief consumers of milk from tuberculous as well as other cows; and considering this, need we wonder "that mortality from Tubercle is great in infancy," or that the authorities, or other parties interested, in "Vienna, New York, and elsewhere," were perfectly justified in considering it necessary to stop the *sale of milk from tuberculous cows?*

THE RELATIVE VALUE OF SUBJECTS TAUGHT THE VETERINARY STUDENT.

BY THOMAS GREAVES, F.R.C.V.S., MANCHESTER.

I DO not intend to decide in a curt or hasty manner this very important question ; although it is not my wish to embark on a controversy, it will be none the worse for being a little ventilated. It is our duty to inquire closely into it ; I am anxious to discuss it, so as to arrive at a clear, correct, and definite conclusion, with the object of improving my profession.

In commencing this subject, I assume that we are all agreed it is necessary that the student shall have a good general education, including a knowledge of French and Latin ; also that it is important he shall acquire a full knowledge of each and all the subjects now taught at college. Having arrived at this conclusion, we will, in the second place, try to concentrate our thoughts on the uses and importance of the various subjects taught, and appraise them at their actual relative value in rendering the student a useful and valuable member of society for the rest of his life. Let us try, also, to realise the relative loss he would experience in his daily life if his education was decidedly deficient in any one or other of these subjects. In continuing our examination, we may also touch upon, or drift into, a consideration of the different degrees of mental force or adaptability of the student, the various temperaments, individual idiosyncrasies, distinguishing characteristics—some of active observation, others of indolent, inactive natures—as well as of the shortcomings of the teachers, and the non-infallibility of the examiners.

The sphere of my observations in my profession extends over fifty years. During this period I have been constantly interchanging opinions with large numbers of members of my profession in the three kingdoms, on the subject of obtaining veterinary knowledge. I have had the high privilege of having discussed this subject with those learned professors, Sewell, Spooner, Simonds, Robertson, Dick, McCall, Williams, and Walley. I have endeavoured to be a close observer of human nature, have had a watchful eye upon a large number of young veterinary surgeons, the manner they conduct business, the aptitude they display, their

general bearing, their status and their character, their success and non-success in life; the successful men, I have traced the cause of their success; the non-successful, I have traced the cause of their non-success. I have seen numbers of members who possessed a good general education, also a good knowledge of the science of their profession, steady, gentlemanly men, yet not successful in their calling—complete failures. I have known other members who were possessed only of a limited education, whose knowledge of the science of their profession was very imperfect, yet who have been a success in their calling, who have gathered together large practices, and been held in high respect by all who knew them. I have known the reverse to this happen in both classes. Let us listen to the voice of reason. It is our duty to ask ourselves, "How is this? why is this?" Some of my readers may say, "Oh, it is because the one is industrious, diligent, attentive, and steady, while the other is idle, indolent, inattentive, and perhaps unsteady." This definition is sadly incomplete; I will grant you it is so in a great many cases, but not in all by any means. I want to see some principle definitely introduced to obviate this state of things, at least in some measure. There are, depend upon it, other causes in existence. I believe it is on all hands admitted that the generality of students of to-day will not compare in usefulness with those of former years; this, too, in the face of a longer college curriculum, and a larger number of teachers than was ever required before. In my long experience I cannot recall the time when there were so many complaints made about the teaching and inefficiency of the student as at the present time. It would be wise for us to put into a practical and definite shape some scheme elaborated out of the principles, characteristics, and qualifications possessed by a successful man, through the instrumentality of which he had attained that success.

It is our bounden duty to examine this subject closely, to find out where the fault lies. Is it in the system of teaching, or the system being imperfectly carried out, that is at fault? If it is, it is our duty to get it altered. Or is it the system of examination, or the system being imperfectly carried out? If it is, it is our duty to get it altered. Let us force the responsi-

bility on the right party. It will be remembered the examiners do not profess to impart any instruction to the student. We ought to centre our thoughts on this subject, and make it an all-absorbing question, until it is rectified. Let us get some definite idea of the way this is to be accomplished. Commence with correct elementary principles. Given the student be made of the right material, is diligent, industrious, and honestly determined to learn, that the teachers do their duty fully, and bestow proper care and attention in instructing him: I say the student should, under these circumstances, come before the examiners much better prepared than he does at the present time. Of necessity there would be fewer rejections and fewer failures in professional practice. Then it is for the examiner to judge of his competency. The examiner is not infallible; he is only human; he may form an incorrect opinion. The student may be inapt in his manipulation, or in his manner of answering questions, which makes an impression on the examiner unfavourable to such student, while all the time much of this is in the exterior only. In the examiner, although he may not have the eye of a magician, there must be an absence of austere, pedantic, or frivolous manners; he must assume none but a business-like air. He should be an enlightened, intelligent man—a man of mature age and experience, considerate, patient, mild, benevolent, keenly observant, and firm; one who puts his questions carefully, clearly, coolly, and kindly, so as to be fully understood; and one who weighs the answers justly, who puts the student at ease through his own apparent complaisancy. Though unseen, there is in him intentness of attention.

The standard of general education of the student has been raised. No one will for a moment dispute that this is not a step in the right direction. We know the increasing area over which modern knowledge spreads itself. It is for us to consider and decide whether the learners learn, or teachers teach a little of everything, or a great deal of some one thing. If we incline to have a great deal of some one or some few things taught, let it be those things which are *essential to our calling* (even at the expense of others less essential), which will and must make the man a useful man.

> "Not to know of things remote and subtle,
> But to know that which before us lies in daily life,
> Is the prime wisdom."

We inquire of the examiners, and they say the majority of students are very far from being well up in this knowledge of the subjects generally. We inquire of the teachers, and they say the examiners examine the students in a manner which is unfair to them; that the ordeal is not a broad, comprehensive, searching or ascertaining of the students' qualifications. We inquire from the students, and they find great fault with both teachers and examiners—the teachers for various shortcomings, and the examiners for examining in a manner and asking questions which their teaching had not fitted them to answer. There is something radically wrong somewhere, or these excuses would not be required. Now, there may be much truth in these complaints, and I maintain they should be rectified. Let us have both teaching and examining efficient, give the student no ground for excuse, and let us pass no students but those who are efficient.

(To be continued.)

THE PATHOLOGY OF A SKIN DISEASE PREVALENT AMONG TROOP-HORSES IN INDIA.

BY W. D. GUNN, M.R.C.V.S., A.V.D., KAMPTEE, INDIA.

MUCH of my time lately has been occupied in investigating the pathology of the Skin Disease which annually attacks the horses in my charge. Hitherto I have utterly failed to cure the disease. All the remedies recommended in the pharmacopœia and by veterinary surgeons I have tried without success. I, therefore, determined to make some experiments. I suspected that some special fungus was probably the exciting cause, and with this idea, I collected several fragments of scabs for microscopical examination. These were soaked in different fluids—such as water, glycerine, and acetic acid—but I could determine nothing.

On the 12th September I made a mixture of one part glycerine and four parts of liquor potassæ. Pieces of scab were de-

posited in this fluid for six hours. They were then taken out, cleaned, and, with the addition of a drop of glycerine, covered with the thin plate of glass. By the aid of a two-inch objective,

and a No. 2 eyeglass, I discovered an animal parasite which rather resembled a Tænia. The length is about $\frac{1}{8}$ of an inch, and width $\frac{1}{1300}$. The neck is $\frac{1}{3}$ of the length of the body, and scarcely half as wide. The head is composed of about twenty processes, which appear to be borers. The caudal extremity is partially truncate.

Nine other cases of Skin Disease were examined by me immediately after my discovery, and in *every* instance specimens more or less perfect (broken, probably, in teasing the mass), were to be observed.

It now will appear patent to everyone that horse-brushes are the vehicles by which the disease is propagated; and they ought not, under any circumstances, to be changed or used indiscriminately.

Now that we know the exciting cause of the disease, the treatment will be more clearly indicated.

For the destruction of these animal parasites, I would suggest the use of sulphurous acid, or a solution of Hydrargyri Bichloridum; the agent to be well rubbed into the parts affected with the brush.

OBSERVATIONS ON SOUNDNESS.

BY R. H. DYER, M.R.C.V.S., LIMERICK.

(*Continued from page* 235.)

Having in my last short paper made a few remarks upon nasal gleet, and referred to that system of glands termed salivary, I will now proceed to describe the affections which more especially interfere with the functions of these glands, such as Strangles (Regular and Irregular), Fistulous Parotid Duct, and Glanders. But before proceeding to the consideration of them, it may be profitable to take a glimpse at the anatomical and physiological bearing of the parts. There are three pairs of salivary glands, or three single glands on either side, viz., the parotid, submaxillary, and sublingual. The parotids are the largest, and are situated near the ears, inferiorly—in fact, immediately below the root of the ear is found the superior part of the gland. It lies in the hollow space at the upper and back part of the head, and is bounded by the branch of the lower jaw anteriorly, and the petrous portion of the temporal bone posteriorly, extending as low down as the angle of the jaw. It is enveloped in cellular tissue, and is made up of many lobes. These lobes are connected together by means of a dense cellular structure. Each has a distinct set of secretory vessels; tubuli arise from them, which at length form one main branch, the excretory duct. The parotid duct emerges from the inferior part of the gland, passes along the inner part of the angle of the jaw, and crosses over the posterior edge of the bone, just above the submaxillary artery. It pierces the buccinator obliquely, and terminates by a small eminence upon the inner surface of the membrane of the mouth, near to the second molar tooth. The submaxillary gland is much smaller than the aforenamed; it lies in the space between the angle of the jaw, is loosely attached by cellular membrane, and is very like the parotid in structure. The termination of the duct will be found upon the *frænum linguæ*. The sublingual gland is much smaller than the last-named; it will be seen upon the under part of the tongue. Its ducts penetrate the membrane upon the side of the *frænum linguæ*. During the mastication of the food, saliva is constantly making its way into the mouth, for the purpose of

being mixed up with it, rendering the act of chewing more easy. The secretion is formed by the three pairs of glands before mentioned. The fluid obtained from the mouth cannot, however, be said to be pure saliva, because a great deal of mucus is found with it. Saliva contains animal and saline matters, free soda and sulphocyanite of potass. The saline constituents of the saliva are nearly allied, or identical with, those of the blood. The tartar found upon the teeth is chiefly composed of the earthy phosphates, the particles being held together by animal matter.

The quantity of saliva formed during the twenty-four hours has been variously estimated. It is, I think, impossible to know what amount is secreted. It is said that a man will secrete from eighteen to twenty ounces in a day; this, however, is mere speculation. A horse produces a prodigious quantity, from the fact of his being engaged so many hours in the act of masticating his food. The flow seldom takes place when it is not wanted. When at college, a cart-horse was suffering from fistula of one parotid duct, and with a view of learning something, I held a graduated measure-glass under the fistula during the time the animal was eating a feed of oats, and something over ten ounces collected.

In "Markham's Masterpiece," one of the most ancient works on diseases of the horse, we read, under the head "Strangles":—This is "but a mean inflammation of the throat, proceeding from some choleric or bloody fluxion, which comes out of the branches of the throat veins into those parts, and there breedeth some hot inflammation, being stirred up either by some great winter cold, or taken after labour. It is a great or hard swelling between the horse's nether chaps, upon the roots of the horse's tongue, and about his throat, which swelling, if it be not prevented, will stop the horse's windpipe, and so strangle or choke him—from which effect, and none other, the name of the disease took its derivation. The signs of this disease, besides the apparent sign thereof, and the palpable feeling of the same, are, the horse's temples of his head will be hollow, and his tongue will hang out of his mouth; his head and eyes will be swollen, and the passage of the throat so stopt that he can neither eat nor drink, and his breath will be exceedingly short. The cure thereof, according to the most

ancient farriers, is, with a round, small, hot iron, to thrust a hole through the skin on both sides the wezand, and then after it beginneth to matter, to mix butter, tannen-water, and suet together and every day anoint the sore therewith, till it be whole." In writing upon "Vives," as he termed Irregular Strangles, he says:—"And the cure, according to the opinion, etc., etc., is this:—If you see the kernels begin to rankle and swell, you shall take the horse's ear, and laying it down along the neck of the horse, at the very end or tip of the ear cut a hole through the skin of the neck the length of an almond or better; and then with a crooked wire pick out all those kernels which you find inflamed; which done, fill the whole full of salt: then about the end of three days you shall find the sore beginneth to matter." This is about the substantial portion of the treatment adopted in those days. Coming down to the present century, Blaine, Youatt, Percivall, Hunter, D'Arboval, and others, have written nearly everything which is worthy of being recorded. There cannot be much doubt that nearly all animals are affected by this form of disease—Strangles—at some time in their lives, much in the same way as children are subject to Measles and other complaints. I also think there can be but little doubt as to its constitutional character. I will relate one or two cases which occurred in my practice, which will, I think, go some way to corroborate the opinion of those who believe it to be a constitutional affection. A yearling colt was brought to me for castration at a particular season, when many colts were lost both in this and other countries after the operation; and I believed this one was unfit for it, as he looked unhealthy. A second was brought at the same time, of the age of two years. I objected to operate. The yearling was sent back home, and the two-year-old was left with me. The first-named was presented again in a week, when I refused, for the second time, to perform the operation. He was led home, a distance of two miles, and brought again, for the third time, at the expiration of another week. I raised the same objection. The owner felt annoyed, believing I was, as I heard afterwards, humbugging him. Up to that time I was unaware that the system of playing off tricks of this kind was practised by any person. However, the owner ordered the caretaker to apply to another

veterinary surgeon, and request he would operate, which he did at the moment, and the colt was led home. In a few hours he became ill, and died in three days, to the amazement of its owner, who, in conversation with a client of mine shortly after, described all that had transpired in reference to the colt and the objections raised by me. He then believed that there was in reality ample reason for the part taken by me, and regretted his disbelief in my judgment. The two-year-old remained in my stables for a fortnight, but remained out of sorts—not ill, but as I thought, breeding Strangles. He was taken home, and in the course of a few days the disease had fully developed into as severe an attack of Strangles as I ever witnessed. Not only were the usual symptoms present, but the skin down to the feet was covered in many parts with sores. These two cases proved beyond the shadow of a doubt the true character of Strangles. Hundreds of cases could be cited if necessary. In the course of the autumn the colt referred to was operated upon, and all was well. Most veterinarians will, doubtless, view Strangles as an affection of the entire system, assuming a febrile character, more or less severe, as the case may be, and having a tendency to the production of an abscess in the submaxillary glands. Why these glands should be more susceptible than others has not been satisfactorily demonstrated, any more than the skin eruption of Measles. I have seen several cases of Irregular Strangles in horses of mature age, and found the three pairs of glands seriously affected, especially the parotid. It need not be urged, therefore, that in pursuing our examinations as to soundness, it would be advisable, perhaps, to devote a few moments longer than we are in the habit of doing to the consideration of the appearance of the mucous membranes; but as so many animals are examined in this country—in point of fact nearly all that are purchased are examined—the owner of an animal would seem annoyed if an examiner dwelt for any length of time when looking at the nasal chamber, fearing that his horse was suspected of having some disease of which he was ignorant. I am sure that I need scarcely remark that Strangles in any form is an unsoundness.

(*To be continued.*)

"BURSATTI": RECORD OF CASES DURING 1883.

BY RICHARD WM. BURKE, M.R.C.V.S., A.V.D., INDIA.

(Continued from page 246.)

M. Leblanc, in *Récueil de Médecine Vétérinaire*, says: "*By combining the use of the microscope with the other means of investigation usually employed, the diagnosis of Cancer becomes comparatively certain.*" (*Récueil de Médecine Vétérinaire*, 4th series.*) M. Leblanc also states that, "Even when a tumour does not reappear after excision, one cannot affirm that the animal is cured." (*Ibid.*)

Scirrhus is a necessary concomitant of Bursatti, and where this is most marked, the cells, though they may be abundant at first, speedily disappear, and the fibrous stroma is greatly in excess, especially towards the centre of the growth, where at length no cells at all can be discovered. I would observe that the uninitiated is very apt to be misled to form hasty inferences attaching to the nature of Bursatti sores, from a habit of confining his investigations to the study of sores during certain stages only, while it is necessary to scrutinise sections of them in *all* their phases. I was frequently myself induced by a multitude of sections presenting an entirely fibromatous structure, to designate what was really cancerous as simple *fibroma;* but the sequence of similar action in the case of other sores affording sections that presented more definite cancer changes, brought me to my former conviction, that *once a cancer, now a fibroma,* is only the operation of *pressure in active growth.*

Dr. R. Mitchell, who is one of our latest writers on Cancer, says: "There is no necessary or specific form in which Cancer structure is manifested. The form of configuration depends almost exclusively on the resistance or non-resistance of the structures which surround or lie adjacent to the local manifestations." †

Again, according to Dr. Arnott, "the hardness or softness of individual cases also probably depends mainly upon rapidity of growth."

Dr. T. W. Cooke, in his treatise on Cancer, its allies and counterfeits, writes: "I would insist upon hardness as a necessary

* *Edinburgh Veterinary Review*, 1859, vol ii., p. 402.
† "Treatise on Cancer," p. 157, 1879.

concomitant in Epithelioma no less than in Scirrhus. If there be no indurated base to an ulcer, or scaly or warty growth, affecting any of the parts mentioned as most liable to this form of disease, I would reject the idea of malignancy. I have had so many opportunities of watching these growths, that I feel myself justified in giving a very strong opinion, *that without an indurated base there is no epithelial Cancer.*" *

Dr. Arnott considers "that by the terms scirrhous and medullary merely a difference in consistence should be understood." While Paget proposes to "distinguish between the different forms of Cancer only by the concurrence in them of the characters of malignant tumours"—pp. 809-10.

In conclusion, I would interpose that many phases surround the history of Bursatti, wholly irrespective of its microscopic aspects as a cancerous affection, issuing in reasons in which the most reluctant alienist must ultimately concur. Last, but not the least important, is the fact that the disease is seen to attack just those parts of the body which are commonly affected by "Epithelioma," namely, the penis, the prepuce, the eyelids, and angles of the mouth,—parts where the skin and mucous surfaces meet—and often, too, the extremities. Reference to the literature of Bursatti will prove this fact.

It has been conceded by Mr. Steel, A.V.D., who has described certain *fungi* in this disease, that "when more is known of Cancer proper, it may be found not unlike Bursatti." † The forte of this statement lies in its way of putting things, not in the things which are put. It refrains from any further consideration of the pathology of Cancer, which it would appear was also due to a "parasite." We admit that the statement is plausible, though it is inconsistent and hypothetical; for it involves the entire abolition of ascertained facts by the most eminent pathologists. Meanwhile, the clinical and historical testimony of some of our most distinguished veterinarians in the country on Bursatti, is found to tally in description with that of medical writers on Cancer as it affects man.

* Mr. Oliphant gives a graphic description of the course and termination of a Bursatti sore, in a paper contributed to the VETERINARY JOURNAL, vol. xi., 1880, pp. 18 and 19.

† VETERINARY JOURNAL, Oct. 1881, p. 241.

Bursatti Cell Concretions.—"*Kunkur.*"*—In regard to this disease—"Bursatti"—I have now conclusively shown, I think, that it is Cancer. What a great many readers, however, will not be able to grasp at first sight, is as to how the peculiar little bodies called "*kunkurs*" are formed and developed. With regard to the human skin, which is analogous in general respects to the equine, we are aware of the existence of the upper and lower skin, one cellular, the other more compact. In it, as the effete cells are shed, further cells are developed in regular order. And if a certain normal stimulus be applied to this epidermis, the cells will form perfectly regular, level skin. But should an abnormal stimulus be applied interfering with the regularity in the occurrence of ordinary phenomena, they will, on the contrary, be prone to take a disorderly course, and present an irregular, rounded, or onion-shaped appearance. And this presentment of the cells is, as we know, a peculiar characteristic of Cancer growth. A deposition of calcareous matter now takes place in these cells, and their aggregate contour is thereby rendered conspicuous. This may be described as practically the formation of "*kunkur*," from its inception to the period of its ultimate formation. Mr. Abernethy has described similar bodies in the disease termed by him "Tuberculous Cancer" of man.† He says: "In some instances portions of the scirrhous mass are converted into a hard substance resembling cartilage, in which bony or calcareous degenerations are occasionally found."

Professor Volkmann,‡ speaking of Lupus associated with canchroid, describes the appearance under the microscope of almost identical bodies—"bulbous formations made up of horny, laminated, epidermis cells, which are harder than is ever met with in Lupus"—resulting from a "copious aggregation of small exuberant cells; and the elements of the cutis, and not unfrequently, of the still deeper seated layers of cellular tissue, are completely displaced and destroyed by them."

* These nodosities, met with in the sores and internal organs of horses suffering from Bursatti, have been called by the *salootrie* "*Kunkur*," which reflects more or less the sort of idea prevailing with this class of men relative to the morphology and general composition of these disease products.

† Hooper's "Medical Dictionary."

‡ "German Clinical Lectures," New Sydenham Society, p. 102. 1876.

Nodules, however, are of various kinds. There are those due to the *bacterium* described by Koch in the disease known as Tuberculosis; others due to the *Strongylus vasorum* of Baillet, which gives rise to the *tuberculous miliary aneurism* studied by Kiener; others produced by the action of another order of parasites, the *actinomyces* in the morbid condition termed Actinomycosis or Rivolta's disease; others caused by the irritation of certain *helminths*, as described by Professor Colin, of the Alfort Veterinary School; others dependent on the action of *micro-organisms* described by MM. Christal and Kiener, in Glanders; lesions due to Pyæmia, to Strangles, and to Catarrhal Pneumonia, which has become chronic by caseating, etc.; as well as echinococcus cysts and other lesions caused by foreign bodies and mechanical and chemical irritants, which have become encysted and undergone caseous or calcareous degeneration in organs, might also be confounded with any of the above. We mention the foregoing, because we know of writers who pretend as to the presence of *kunkurs* in internal organs being general to horses in India, having nothing in common with the nature of Bursatti.

The nodule in every instance is only the expression of an irritant, simple or specific. In contagious disease, apart from the physical character of the nodule, it is characterised by inoculable properties, *i.e.*, of its tendency to produce similar nodules by inoculation of a healthy, but properly constituted animal. That is the great diagnostic criterion of a contagious nodule.

The irritant which produces the Bursatti nodule in remote parts is merely a tissue irritant derived from the external sore, and acts embolically; the caseation that sometimes follows is a mishap due to insufficient blood supply; while the later change of calcification is due to infiltration of this structure with inorganic salts. In regard to the caseation of Bursatti nodules, that can only take place as a result of complicity with other products and from insufficient nutriment; which accounts for the infrequency with which *yellow* nodules are here found to exist, and in this respect the disease differs in an important particular from Tuberculosis. It is commoner to meet with the grey formations, and those which have undergone that physical variation by

transformation into a horny mass, called cornification, or by infiltration with inorganic salts into *womb-stones* or "*kunkur;*" whilst those situated under capsules of organs are usually umbilicated, or slightly depressed in their centre. This appearance is very characteristic in cases of secondary Bursatti, when the disease has reached the internal organs, which I have from the first maintained that this actually happens in most cases. We were almost the first, so far as the literature of the subject shows, to consider the *pathological anatomy* of this affection in a paper contributed to the VETERINARY JOURNAL, vol. xiv., 1882.

It may be stated, generally, that the physical characters of more or less all the nodular formations in the lungs and other internal organs depend for the most part upon their development, period of maturity, and complicity with secondary results. But the grey nodule, in the case of Tuberculosis at least, according to most authorities, "regularly undergoes the caseous metamorphosis and subsequent *softening;*" so that it is necessary to bear in mind this frequent change, and to recollect that young tubercle comports itself differently from older tubercle, that the former is viable and living, the latter often only detritus and disorganisation. Dr. Arthur Wyne Foot* says: "Virchow's teaching that all cheesy matter is not tubercular has, from the preponderating influence of such a master, been since pushed to so dangerous an extreme, that many are even disposed to doubt the tubercular nature of any caseous matter; whereas, on the contrary, tubercle is one of the most frequent, although not the sole cause of such productions in the body."

Dr. Bennett† says: "Like tubercular deposits, Cancer may be infiltrated through all the tissues, but usually it maintains the character of isolated masses, pressing on and pushing aside the surrounding textures without invading them."

Dr. Mitchell, in speaking of the absence of inflammation in Cancer, says that it is characteristic of that disease for it to occasion *no* suppuration until a very late stage, and even seldom then ("Treatise on Cancer," p. 83).

* "Lecture on Tuberculosis," by Dr. Arthur Wyne Foot, Senior Physician to the Meath Hospital and County of Dublin Infirmary.

† *British Medical Journal*, May 28th, p. 541, 1870.

Principal Veterinary Surgeon George A. Oliphant, in describing the nature of *kunkur* found in Bursatti, says: "It appears to consist of animal matter, containing deposits of salts; when fresh it cuts like cartilage, and when dried is distinctly gritty. *In all these points it is very like tubercle, but I have failed, so far, to trace in it one peculiarity of that diseased product—softening*" (VETERINARY JOURNAL, vol. xi., 1880).

The presence of inflammation in tubercle and its absence in "Bursatti" indicate the great distinction between the two diseases.

Hunter writes: "The Cancer, although it produces a secretion, yet does not produce pus till exposed; it does not suppurate till inflammation comes on, and even seldom then, for true suppuration arises from inflammation, terminating in a disposition to heal, which is not the case with Cancer" ("On the Blood," p. 493, 1828).

Dr. Stokes considers "that the origin of Cancer is not to be attributed to any inflammatory process. The disease did not produce irritative changes in surrounding structures, but was a process of *conversion*" (*British Medical Journal*, April 8th, 1871, p. 381). And the causes of this were explained by Van der Kolk,* as early as 1847, in his admirable work "On the Formation and Extension of Cancer Cells in the Neighbourhood of Cancer, and their Importance to the Performance of an Operation."

In the rapid disease process these bodies—"*kunkurs*"—are sometimes found embedded beneath the skin. To the natural query of how this happens, let us take, for instance, the case of the disease having affected the skin of the fetlock. As it eats into the deeper structures it forms a cavity, and the healthy adjacent skin in its growth will naturally overlap this cavity, the disease scooping itself in under the edges. Dr. S. Fenwick, writing "On Atrophy of Stomach as a Result of Cancer," says:† "I have seen it most developed where the tumour of the mamma was of a hard, fibrous character, slow of growth, and where eventually *small nodules formed in the skin.*"

(*To be continued.*)

* *British and Foreign Medico-Chirurgical Review*, No. 30, April, 1855.

† *Retrospect of Medicine*, July to December, p. 108, 1877.

Editorial.

THE PRACTICAL EDUCATION OF STUDENTS AND VETERINARY SURGEONS.

In our last number we remarked that we had pressing reasons for earnestly wishing to raise the general standard of professional knowledge of those who present themselves for admission to the Royal College of Veterinary Surgeons. We now desire to invite special consideration to the practical education of the candidate, and to urge that there is the greatest need for reform. It is a fitting time to do so, as a new session has just begun at our colleges, and students, both medical and veterinary, have listened to valuable introductory addresses, containing much good and salutary advice. Our object in writing this article is to impress upon all concerned how great a necessity there is for *more practical knowledge*. No one who has anything to do with the examination of young veterinary surgeons can fail to be struck with the deplorable want of acquaintance shown by the great majority with the practical rudiments of their profession. We, therefore, submit that all our final examinations, on the matters we are about to discuss, should be made much more thorough and searching than has hitherto been the case. It surely is not too much to ask that, before a candidate obtains his diploma, he shall be able to point out in the living horse such common things as the "withers," the "loins," the "croup," the "point of the shoulder," the "hip," the "pastern," the "fetlock," and various other parts of the body. It is, however, our constant experience that one young veterinary surgeon after another appears, who is quite unacquainted with several of these common and elementary terms. It is not too much to demand, that a newly-made veterinary surgeon shall be able to apply to the different parts of the foot the common terms which are generally employed by the smith, so as to be able to give intelligible orders or instruction, and that he should also know the names of the shoeing tools, and of the different parts of the shoe. It is high time that young veterinary surgeons should cease to regard the nasal orifice of the lachrymal duct as a glanderous ulcer, and, therefore, complacently say that they would advise the horse to be destroyed. This mistake sounds almost incredible, yet it is of sufficiently common occurrence, and, if the animal be at the same time suffering from a catarrhal discharge, his doom is sealed. We heard a clever veterinary surgeon remark, in discussing this error, that it was a very severe measure to destroy the poor horse for possessing a lachrymal duct. It is not too much to expect that the young veterinary surgeon should understand how to "pick up a horse's foot," and that he should generally know how to "go about a horse," or other patient, in a proper manner, and consequently with the least amount of danger to himself. If he is ignorant of these things he should on no account receive a diploma to practise. All owners of stock and their attendants can see whether the practitioner is familiar with these necessary matters, and if he is not so, he excites ridicule, and cannot hope to succeed in his avocation. Furthermore, he

brings discredit on his teachers as well as on his diploma. But where veterinary surgeons—young and old—are most exposed to the scrutiny and criticism of onlookers is in the examining of horses for soundness, a professional duty and high trust of the very greatest importance. Here it is quite common for scores and hundreds, nay thousands, of pounds to depend on the capacity of the examiner. Any one acquainted with horses can see, after the first few moments, whether the veterinary surgeon is fit to be trusted to examine a horse for soundness. If he goes about it in a weak and undecided way—first looking at one leg, then changing to some distant part of the body, perhaps on the opposite side, then suddenly returning to where he first started, and so on, in an apparently aimless manner—he is a failure. Those, however, who have observed many young veterinary surgeons examine horses will admit that the picture we have just sketched is in no wise overdrawn, and that it is true of at least four out of every ten examples taken at hazard. Is not this a very lamentable state of affairs? and should it be suffered to continue? If a would-be veterinary surgeon examines a horse in the manner we have just described—although, after much loss of time and indecision, he may at last stumble on a right conclusion—he should not receive his diploma unless he can perform this most important duty in a regular and systematic way. Let any one observe a good and successful practitioner, who is accustomed to examine many horses, and he will find his method such, that if a mistake be made, it will arise, not because he omitted to do anything, but from his failing to detect the fault, although he actually looked for it. If a veterinary surgeon examines a horse in any other way than this, he may be quite certain that he has still much to learn. We would suggest that at all the colleges the senior students should be well instructed and frequently tested in what we have just mentioned. Many a veterinary surgeon has made his mark through being able to examine horses for soundness in an efficient and satisfactory manner; many a practitioner meets his ruin through ignorance of it. All candidates for a diploma should be able to speak with confidence as to which leg of a horse is lame, and yet we constantly see mistakes made in this respect. Let us briefly refer to operations. How false is the position of the young veterinary surgeon who is ignorant of the usual and common ones, and of the different methods of casting horses and other patients, and securing them. This ought not to be, but it will occur so long as students merely look on, and are not often compelled to do these things over and over again with their own hands, and until they are *perfectly familiar with them*. A false pride is the cause of most of the ignorance we are now considering. For fear of ridicule students will not ask for information on what they imagine others will think they ought to know. It may embolden these diffident ones to learn that the very students at the colleges who pretend to most practical knowledge are frequently, when tested, found to be the most ignorant, and in want of instruction. Does not all this seem to favour the suggestion which we now make to teachers and students, that the latter should spend much of their leisure time, while on the college premises, between lectures, in showing each other practical things. Why should not the most earnest students form voluntary classes for mutual practical

instruction? All are much in need of it, and they who fancy they can learn by only looking on are woefully mistaken. What we consider desirable is that all would-be candidates for a diploma should be at least well acquainted with what every bystander can criticise, and that, if ignorant in these matters, they should on no account be admitted as members of the Royal College of Veterinary Surgeons. We beg earnestly to commend to all who are responsible—however little—for any pupil's education that these necessary practical matters demand unceasing vigilance and attention. It is most unjust to the student to allow him to evade learning the practical rudiments of his profession, and it is still more unjust to the public to give a diploma to one who is not familiarly acquainted with what we have here noticed. We may add that we are by no means of those who believe that our professional and practical education has deteriorated; on the contrary, we consider that during the last ten years it has much improved. But we cannot, and ought not, to suffer such common failings as we have now mentioned to pass without protest. In conclusion, we would say to all students, "Diligently work to make yourself master of what we have named in this article; if you do not, you will bitterly regret it when you have to rely upon your own knowledge and exertions to fight the great battle of life." There is more to be said on this subject of practical education, and we shall refer to it on a future occasion.

THE BREEDING AND CLASSIFICATION OF CLYDESDALES.

BY PROFESSOR WALLEY, M.R.C.V.S, EDINBURGH.

My attention having, in various ways, been recently drawn to the above subject, I take the liberty of making a few remarks in reference to it. At the outset, I wish it to be distinctly understood that I have not written the following lines from any interested motives. I have nothing whatever to do with Clydesdales pecuniarily, but I must confess I am a great admirer of them; nor do I expect that my ideas will find favour in every quarter, but I claim, as I give to others, the right of entertaining my own opinion.

So far as I can gather, one of the great objects of breeders in the past has been to obtain horses with plenty of hair on their legs—"well feathered," in other terms; and I would ask at once, of what benefit is this superabundant growth of hair on the lower part of the extremities? If horses were, like Cochin-China fowls or pouter pigeons, required for no more important purpose than to strut about in a dignified manner and to please the eye of their owners, I could understand the anxiety of some breeders to increase—even by questionable artificial means—the quantity of this birsute appendage; but seeing that horses are intended to subserve a useful purpose, I fail to see wherein they are advantaged by the possession of a plentiful supply thereof on the posterior aspect of their limbs. Indeed, considering the great disadvantages its possession entails upon animals in hard work and in dirty weather, I marvel that men can be found to advocate its production. That a large quantity of hair on the legs improves the appearance of an animal I have yet to learn; and if this were the case, how is it that the absence thereof in the legs of light horses is accepted as a mark of beauty and a sign of good breeding? A profusion of hair presupposes a coarse skin, and a coarse skin means a corresponding decrease in vitality, and consequently a greater

liability to diseases of malnutrition—such as grease, thick legs, and cracked heels. It further means a more highly lymphatic constitution, and as a consequence a greater tendency to such affections as Weed. Bushy hair is also a splendid harbourer of dirt, and an effectual screener of laziness; moreover, being very retentive of moisture, it predisposes to sloughs and hacks of the pasterns and coronets, and leads to excessive irritation and itching.

Another great point aimed at by some breeders, is the production of *plenty of bone*. This in itself is laudable enough, but I would suggest that if a little more attention was given to *quality of bone*, a greater and more valuable desideratum would be obtained than can ever be got by mere quantity. In comparison, the small bones of the thoroughbred are, in strength, as two to one of the ordinary cart-horse. Quality of texture—not excess of texture—is required, and I would prefer the Cleveland bay, with his flat shanks and cannons, before the round-boned heavy cart-horse we so frequently meet with, for fatiguing and straining work. A broad, flat cannon-bone is usually associated with well-developed tendons, the whole measuring between five and six inches in width. The round cannon, on the contrary, is associated with ill-developed tendons and ligaments, and rarely exceeds four or four and a half inches in width. The former will stand any reasonable strain on the tendons; the latter is a prolific source of contracted and straightened limbs. In conjunction with such conditions as these, we want, what are frequently overlooked, big joints and well-developed muscles. If we have the former, we get freedom and elasticity of motion, with plenty of room for attachment of the more active agents of locomotion; and if a horse possesses the latter, he possesses the means of co-ordinating the movements of his limbs, and is thus less liable to suffer from ligamentous, tendinous, and joint lesions. If greater care were exercised in the production of *big arms and big thighs*, we should see fewer "calf-kneed" and "sickle-hocked" brutes than we now do, and "knuckling-over at the fetlocks" would be a rare deformity.

In regard to the shape of the pasterns, opinions seem to differ very widely, some minds favouring a comparatively straight, and consequently short pastern; others a very oblique, and consequently a long pastern. In both extremes there is danger, and in every case a happy medium should be aimed at. If the pastern is straight and short, it favours concussion and the production of ring-bone and side-bone, and predisposes to strain of the "check" ligaments at the back of and below the hocks and knees; while opposite extremes most certainly do not, as a rule, add to the strength and traction power of the limbs. Personally, however, I prefer the latter extreme.

Other points which add to the traction power of an animal—and that by virtue of affording space for attachment of muscles, as well as by increasing leverage—are well developed *leverage bones*, such as the ilium (point of hip), the olecranon (point of elbow), and the calcis (point of hock or nap); and well-developed *floating bones*, as the patella (stifle cap), the trapezium at the back of the knee, and the sesamoids at the back of the fetlock. In the Clydesdale some of the bones mentioned are conspicuously short, and most notably so in the case of the calces, the shortening leading to great prominence of the flexor tendons, which gives to the hock the appearance of being the subject of Thorough-pin, a disease to which such hocks, in my experience, are not particularly prone, though they are frequently, from their narrow formation, affected with bone-spavin.

In the estimation of some judges, I am afraid, gross condition counts for more than do good points; and I suspect that many a horse which appears, in our showyards as a "splendid creature," would be only of use for the purpose of a "clothes horse," if reduced in condition to the level of a working animal; and this abuse and absurdity will continue, to the disadvantage of

the horse, until those interested begin to recognise that "fat is not power," and that "it hides a multitude of sins of conformation."

Excess of fat and a forced condition predispose to disease, especially of the liver, and give an animal a poor chance of battling against adversity when it comes upon him, and in the case of mares (as of cows or ewes) is very apt to interfere with impregnation and the nutrition of the fœtus. Not only does high condition swamp sins of conformation, and tend to produce sterility, but it more seriously, and very largely, distracts the attention of judges from the *one point of importance* in connection with breeding animals, viz., *soundness.*

If there is one thing which has caused me more amazement than another in connection with the awarding of prizes to Clydesdales, it is the utter neglect of all ordinary precautions to ensure that the prize is given to animals of resonably sound constitution. In the ring, horses are often kept on the short leet with constitutional defects so glaring that even the veriest novice in veterinary science would detect them in a moment, and order the horse's groom to "to stand aside" with him; but the judges in their wisdom prefer to give such animals "a chance," and not infrequently are ultimately persuaded to "give them a place" too, on the principle, I suppose, that they "improve on acquaintance."

I have said elsewhere, and I repeat it here, that this neglect of ordinary precautions to ensure that prize winners may be entrusted with the important function of begetting sound animals, is likely to be the rift in the lute of the Clydesdale breeder which will spoil its melody; and so long as agricultural societies fail to recognise the important fact that it is their duty to protect the breeding public from the danger to which I refer, and so long as they allow their stamp of approval to be put upon brutes unfit for any other purpose save that of being deprived of the power of propagating their species, and ending their lives between the shafts of a cart or in the plough, so long will the evil be perpetuated. If animals were only bred for the purpose of turning them over at two and three years old to outside purchasers with more money than brains, the system of breeding from unsound animals could not be productive of any material harm; but seeing that in *the long run the profit of the breeder must come from the consumers, i.e.*, from those who require horses for *utility* only, the utter carelessness so largely shown in reference to unsoundness is rapidly bringing on "a day of reckoning" for breeders of this class. It is all very well for a man to say, when he has his horse on his own farm, "Oh, it's only a bit side-bone;" or, "his hock is just a wee bit puffed." But the "bit side-bone," and the "wee bit puff" are very frequently a curse to the owners of town horses, and the farmer and contractor alike forget that what may be a minor defect on land becomes a major defect on the streets.

I must most emphatically declare that, in my opinion, no animal, be he Clydesdale or any other breed, should be awarded a prize as a stock-producer if he has the slightest trace of constitutional disease about him, and that every batch of judges should not only be accompanied in the ring by an attending member, but by a skilled veterinarian—or two, more preferably—in large shows. The attempts made by some judges to combine the functions of veterinary surgeon and judge are certainly most amusing to the professional onlooker; and the tailor-like fashion in which some of them pretend to examine the limbs of the animals they are judging is not calculated to give horsemen a very favourable impression of their veterinary skill.

In the matter of classification it seems to me that the system at present pursued has something strangely anomalous about it. Why should the Clydesdale of elephantine proportions be placed alongside the horse of comparatively pony-like proportions? Are they not required for two distinct purposes? While the latter would be helpless in dealing with a four or six ton log of timber, or with a lorry load of three or four tons weight, the former

would, by his lumbering movements, wear himself out in a short time if put in to plough soft or yielding land. Weight should be placed as a counteracting force to weight, and activity be kept for work where activity is of more importance than power. Moreover, it is unfair to both classes to place them in juxtaposition with each other, for their chances of taking a prize in a showyard will most certainly depend to a very large extent upon the proclivities of the judge; if he be a heavy-weight man the heavy weight will win, while if he be a light-weight man the heavy horse stands but a poor chance against his lighter neighbour, no matter how much superior he may be in other respects. The truth of the comparison I have drawn never received stronger confirmation than at the Centenary Show, where, in the class of two year-olds, an elephant, comparatively, was chosen to "stand in" for the money prizes alongside comparative pigmies; and the same anomaly was seen also in some of the other classes. Is there, may I ask, any reason why two distinct classes of Clydesdales should not be instituted, viz, an *agricultural and cart class* and a *heavy trade and lorry class?* Of the heavy class of horses for town purposes there is, it seems to me, a strange dearth at the present time; indeed, they are scarcely to be got for money. Doubtless this can be explained to a large extent on the hypothesis that every colt which promises to develop into anything like a horse is left entire, and after he has attained maturity, his owner grudges to render him useful and valuable as a gelding, no matter how unsuited he may be for the purposes of procreation, and does all in his power to sell him for a long price as a stock-getter; his efforts in this direction—by the aid of pedigree, trimming, and fat—being frequently crowned with success. I am strongly of opinion that every animal which, at the age of eighteen months or two years, shows a lack of those points which go to make a valuable sire, should be castrated, the comparative risk in castration between a yearling and a two-year-old being by no means so great as is generally supposed, and even if it did involve a greater risk, this would be more than counterbalanced by the increase in stamina and development which would ensue from leaving the animal for a longer period in its natural state.

I know that an objection is sometimes entertained against the breeding of big horses from their, theoretically, greater liability to become roarers, and to develop side-bones, etc.; but this objection would not in any sense be valid, if strict attention were paid to soundness and conformation. In speaking of big horses, I do not necessarily refer to mere height, but rather to a well-developed, bony frame-work, with plenty of room for the respiratory, circulatory, and digestive organs; plenty of muscle, good shoulders, haunches, arms, and thighs; big joints, and short shanks and cannons, and good, open feet. The animal that is required for heavy town work can be described in the single sentence—"a mountain in a mole heap." We don't want long-legged, narrow-chested, flat-barrelled animals, with long thin necks and head set on at an acute angle. They are neither useful nor ornamental, but are deficient in constitutional stamina, and, as a rule, are the first to fall victim to enzootic and epizootic affections, and the first to succumb to serious sporadic maladies. For town work, big horses are required, not only on account of the great weights that have to be drawn, but also on the score of economy. With rates of cartage as low as it is possible for them to be fixed, and with the present high price of labour, one horse requires to be strong enough to do the work of two before a reasonable profit can be obtained; and if our breeders neglect to provide such animals, they must expect to see the Shire horse replace the Clydesdale; and not only so, but when the day comes, as it most assuredly will, that the present foreign demand slackens, they must expect to have a large number of animals left on their hands, to be sold at remunerative prices. The best customer of the breeder and trader, in my opinion, is the steady and certain consumer.

THE OUTBREAK OF CATARRH AMONG SHEEP IN QUEENSLAND.

THE CHIEF INSPECTOR OF STOCK *to* THE UNDER COLONIAL SECRETARY.

Office of Chief Inspector of Stock,
Brisbane, *1st August*, 1884.

SIR,—I have the honour to report, for the information of the Honourable the Colonial Secretary, that on the 19th July last, Inspector Roebuck, of Wide Bay and Burnett Districts, reported to me that a bad case of Catarrh had appeared at Degilbo Station, in a flock of 8,000 travelling sheep, the property of the Hon. James Taylor, of Cecil Plains.

Although I had every confidence in the knowledge and judgment of the Inspector, who is one of the most experienced officers on the staff, and has a good practical knowledge of this particular disease, I deemed it my duty to proceed to the district and make inquiries into all the surroundings of the occurrence.

I arrived at Degilbo on the morning of the 25th, and found the sheep (a flock of strong young wethers) on camp, with over a hundred lying dead, many in the last agonies of death, and, according to the estimate of the Inspector, over forty per cent. of the whole flock in various stages of the disease known as Catarrh.

The death-rate at that time was, and for several days previously, I was informed, had been over two hundred daily; and the total number of deaths up to that date over seventeen hundred. The symptoms are the most clearly defined of any previous case of *nasal*, as contradistinguished from *pulmonary* Catarrh, within my somewhat extensive personal experience of the disease.

All the organs were perfectly healthy. The lungs, liver, pleura, etc., and the alimentary canal throughout its entire length, were in a perfectly natural condition; and it was only in the respiratory passages of the head and throat—from the nose along the bronchial tubes—that the effects of the disease were seen. There, however, they were most pronounced and unmistakable, the lining membranes being totally destroyed by severe inflammation. In most instances there was a copious discharge from the nose; but in a few cases this was not extensive. In all cases where the nasal discharge was slight, the Inspector and those in charge of the sheep observed that the brain was affected. The animals would frequently throw up their heads and suddenly spring upwards on their hind legs, with other symptoms which the shepherds descriptively term *crankiness*. These symptoms are exactly in accord with those described by Dr. Bennett and other professional gentlemen who, at the instance of the New South Wales Government, made a searching inquiry into the first outbreak of Catarrh in Australia in 1834, and they are also in keeping with my own practical experience of the disease, particularly during an outbreak of it in my own flocks on the Murray, in 1856, when my losses amounted to 5000 sheep in the short space of three weeks.

It is worthy of remark that the first outbreak of Catarrh appeared during a winter following on a severe droughty summer, and this has generally been the case with subsequent outbreaks, except when they have occurred from actual contagion, when the disease not unfrequently appeared in summer. My first experience of it in Victoria, in 1854, was in the month of February; but that was an undoubted result of contagion from infected sheep travelled from the high lands of Monaro, and infecting all the sheep with which they came in contact on their route. In such cases it rapidly disappears when the sheep have access to burnt feed or young succulent grass.

In districts which may be considered its habitat, such as Monaro in New South Wales, and portions of the Upper Burnett of this colony—in both of which it lingered for years—the annual losses were comparatively trifling.

I have dwelt at greater length on a description of the symptoms and *post-mortem* appearances of the disease than may appear necessary in a Report like this or to those to whom the disease is familiar ; but I have deemed it well to do so because, fortunately, instances of it are now so rare that few of our present sheepowners have seen it, and I find that its nature is little if at all understood by a large majority. Many appear to be under the impression that Catarrh in sheep is simply a violent cold. To some extent the name is misleading. Catarrh proper is an endemic disease, similar to the disease of that name developed in the horse, and even in the human subject, by no means fatal, and by many considered neither infectious nor contagious. The disease under notice, however, is a highly malignant febrile disease, very fatal and contagious, and is more correctly described by the term originally applied to it by medical men and veterinary surgeons—namely, *Catarrhal fever.*

So far, no cure of general application has been discovered for this disease.

The sheep left Cecil Plains on the 8th of June, and travelled by way of Nanango, Barambah, Bonara, and Kilkivan, and it is evident from their condition that they have been carefully driven.

The first appearance of the disease occurred on 4th July, two days' stage from the Kilkivan head station, when two sheep were found dead on camp in the morning, and the death-rate increased until at the time of my first seeing the sheep it had reached between three and four per cent. daily. On the last occasion of my visiting the flock—on the evening of the 29th—3,000 had succumbed, equal to a loss of 37½ per cent. of the whole flock. From this it will be readily understood that the attack is of a most alarming character.

It would be idle, at the present stage of inquiry, to speculate as to whether this outbreak is the result of contagion, heredity, or constitutional predisposition, or whether it is a case of spontaneous development.

Hitherto its appearance has been traced to one or other of the two first-named causes, and the measures adopted for so successfully stamping it out were founded on a knowledge of that fact. Catarrh has never been known in the Cecil Plains flocks, and therefore it cannot be traced to heredity. Neither have we the slightest reason to attribute it to constitutional predisposition. When it has appeared spontaneously in sheep hereditarily predisposed to it two never-failing *post-mortem* appearances are present :—The stomach is impacted with undigested food, and there is an unusual accumulation of fæcal matter in the intestines. Neither of these symptoms is present in this instance, and therefore, according to all previous experience of the disease, the present outbreak has all the appearance of having resulted from contagion.

Our first duty after isolating the infected flock, was to ascertain whether any other sheep had travelled over the same ground since the development of the same first symptoms, as large numbers had been and were then travelling in the Wide Bay and Burnett Districts in consequence of the drought.

So far, from all we have been able to learn, only one flock of about 10,000, belonging to Eton Vale Run, had touched the route after the disease had become patent. This flock not only crossed the track, but actually camped on a portion of it, after the drover had been cautioned as to the danger he would incur in so doing. I therefore directed that the sheep be placed in quarantine on Doondul Run, where they were at the time, and where they will remain until the Inspector and Sheep Directors are thoroughly satisfied that their release will not incur any danger. The route along which the infected sheep travelled from Kilkivan, as well as that portion of the Maryborough and Gayndah road intersecting the infected country, has been closed to all sheep traffic, and as the Act provides that all those lands must remain in quarantine for at least six months, I have every reason to hope that the spread of the disease has been completely checked. Previous experience on this point has shown that the contagium of Catarrh is dissipated, or at least rendered innocuous, by a heavy rainfall.

Two of the sheep directors of the district, Messrs. Eaton and Rose inspected the flock, and the latter, with the Inspector, Mr. Roebuck, issued the necessary order to destroy. The destruction is being carried out as expeditiously as is possible with the limited amount of labour available.

The directors were of my opinion that, under Section 29 of the Act, they had no option but to order the destruction of the flock; but as this is the first instance of disease appearing in travelling sheep, I deemed it advisable to proceed to Gayndah and obtain, by wire, the opinion of the Minister on the question, so that until receipt of your reply the destruction was confined to such of the sheep as were beyond all hope of recovery.

Under the circumstances, I consider the destruction of the whole flock by fire necessary for the safety of the other sheep in the colony, as sheep that have once developed symptoms of Catarrh are liable to subsequent attacks, and if this flock had been permitted to be removed to the centre of a sheep district the consequences might ultimately have been very serious.

I regret that, through the absence of facilities, the sheep could not be boiled down. Even if facilities had existed at Maryborough, as formerly, the risk of travelling them to the ports would have been much greater than the small saving to the sheep fund would have justified.

The gentleman in charge of the sheep, Mr. Bolton, has given us every assistance within his power in tracing the extent of the infection, and the Directors, the Inspector, and myself, are under a strong sense of obligation to Mr. Hooper, the manager of Degilbo Station, for the many facilities he has offered and the valuable assistance he has rendered throughout.

The inspector has placed a gentleman in charge of the sheep for a few days to admit of his inspecting the various runs through which the flock has travelled, and will place any sheep or land of which there is proof of contact with the infected flock, in quarantine, and give due publicity of the fact in the newspapers circulating in the district.

I have instructed the Darling Downs Inspector to proceed at once to Degilbo, and make himself acquainted with the symptoms of the disease, so that he may keep up a strict inspection of all the Downs flocks, portions of which have been recently travelled in the Wide Bay and Burnett Districts. I have, etc.,

P. R. GORDON, Chief Inspector of Stock.

BURSÆ MUCOSÆ.*

BY PROFESSOR F. EICHBAUM, OF GIESSEN.

THE ANATOMY AND HISTOLOGY OF THE MUCOUS SACS AND TENDON SHEATHS OF HORSES.

ON all those parts of the body where muscles, tendons, and skin play over bony protuberances, we find a membranous sac filled with a small quantity of slippery fluid. These sacs receive various names according to their situation; those under muscle and skin are called "mucous sacs" (Schleimbeutel), or *Bursæ mucosæ;* those under or surrounding tendons "mucous sheaths" or "tendon sheaths" (Scherenscheiden) *Bursæ mucosæ vaginalis*, sine *Vaginæ tendinum mucosæ*, s. *synoviales.* The function of these structures is the same in either situation—viz, to facilitate the gliding action of skin, muscle, and tendons over any hard substance beneath them, in order to prevent friction and tearing of the soft tissues. Mucous sacs and tendon sheaths not only resemble each other in their physiological function, but also in the ana-

* Translated from the "Archiv fur Wissenschaftliche und Practische Thierheilkunde," Bd. ix., Heft 1 and 2, by G. A. Banham, F.R.C.V.S.

tomical structure of their walls, and the fluid they contain. They differ, however, in form and situation; for instance, *Bursæ mucosæ* are generally round or oval sacs, situated on one side only of the muscle or tendon to which it is attached, whilst *Bursæ mucosæ vaginalis* are cylindrical sacs surrounding tendons which pass through their centres. Variations of this latter form are frequently observed; the sheath may only be on one side of the tendon and may be united to it, so as to form a long mucous sac or sheath-like bursæ—*Bursæ vaginalis*. When the structures are studied more closely, we find there are histological and morphological differences and peculiarities which require special attention.

In surgery, it is important that a knowledge of these structures should be obtained. They frequently suffer from the effects of bruises or wounds, which give rise to acute or chronic inflammation accompanied or followed by functional disturbances (lameness, etc.) or a chronic accumulation of the unnaturally large amount of fluid in the sac (Hygroma), causing deformities of the part. As examples of these may be mentioned—diseases (or injuries) of the tendinous sheaths of the extremities of horses, the subcutaneous bursæ on the Processus anconæus or P. calcaneus, the bursæ under the insertion part of the cordiform part of the Ligamentum nuchæ to the occiput (Blain), to disease of the bursæ under the medial insertion branch of the M. tibialis anticus (Flexor metatarsi) (Dickerhoff) on the internal part of the hock, and the Bursæ podotrochlearis (Branell) between the navicular bone and the perforans tendon. Finally, the fact that some of the bursæ or tendon sheaths of horses communicate with the joint proper, and that alterations in the one, as a rule, give rise to disease in the other, suffices to show how important it is that the operating surgeon should be familiar with them.

These structures are, as will be seen below, not at all constant. Age, constitution, use, or particular kinds of work, etc., all play a part in producing deviations in their presence, size, and shape, and especially is this the case with the Bursæ mucosæ under the various parts of the skin. We have endeavoured—after several years' continuous study—to tabulate the presence of these structures on the various parts of the body. Before we describe them, however, we will first look at their anatomy and histological structure.

In the following description of our investigation, some of the Bursæ mucosæ which may occasionally be found in the body may have been omitted, yet we trust our readers will find sufficient material to judge of the frequency of these bursæ, and that it will stimulate some of them to continue investigations in a similar direction.

The Structure and Presence of the Bursæ Mucosæ and Vaginæ Tendinum Mucosæ.

The mucous bursæ are, as mentioned above, usually closed, flattened sacs of various sizes; when filled or injected they assume an oval or globular form. In the normal condition they contain a small quantity of fluid similar to that found in joints (synovia), so that their internal surfaces are separated from each other by a thin layer of fluid to allow the structures in contact with their external surfaces (skin, muscle, tendon, or bone) to glide easily over each other. The walls of the sac are composed of a transparent connective tissue membrane varying in thickness; they are sometimes loosely united to the neighbouring organs, at others intimately connected with them, so much so that it is difficult to say whether the sac possesses a distinct membrane of its own or not. Their internal surfaces present different appearances in different bursæ. Mostly—and this is the case with those found under muscle and tendons—they are smooth, and only present here and there papillous

formations, resembling those found on the internal surface of synovial membranes of joints. These papillæ are occasionally of a red colour, due to a loop of blood-vessel traversing them. On the other hand, the internal surface of the subcutaneous bursæ are uneven, this is due to the fibres of their external coat taking diverse directions, for no distinct boundary can be defined. The fibres may frequently be seen passing across the lumen of the sac and mingling with similar fibres from the opposite side, so that a network of fibrous tissue is found in the bursæ. We also find the sac lined with a greyish-red, unctuous, fatty material, which is the result of a fatty degeneration of the internal surface of the sac. Whether the latter is merely a pathological change, we are, at present, not prepared to say; but such a condition has frequently been the case in the bursæ situated under the skin on the anterior spinous process of the ilium.

These conditions, and the circumstance that the walls as well as the partitions of these bursæ are composed of condensed subcutaneous connective tissue, give sufficient evidence of the genesis of these questionable formations, which we will now study more minutely.

We may conveniently divide the Bursæ mucosæ into two groups: 1st, the superficial, or those found under the skin, BURSÆ SUBCUTANÆ; and, 2nd, the deep-seated, or those found in connection with muscle and tendons, BURSÆ SUBTENDINOSÆ. Subcutaneous bursæ may appear in any part of the body where the skin plays over a bony or hard projection, as, *e.g.*, under the skin covering the antero-inferior spinous process of the ilium, olecranon, tuberositos-calcanei, the maleoli, and less frequently under the skin covering the patella, withers, sacrum, and on the extension side of joints. The size and presence of these bursæ are very uncertain and changeable, so much so, that great differences may exist even when comparing one side of the body with the other of the same animal; and any comparison of their presence in young and aged animals must be left out of the question The older the animal the more numerous will these bursæ be. None are found in the fœtus, thus showing that these sacs are formed with age, and are the result of mechanical agencies. His* explains their formation as follows:— When the skin moves over joints (during flexion or extension), or passes over bony or other hard protuberances, the subcutaneous connective tissue becomes torn or ruptured, thereby causing spaces into which fluid collects. The boundary walls of these spaces are at first irregular, and formed by the adjacent subcutaneous tissue; they may retain their torn appearance for some time, but gradually lose it, and become finally smooth; in either case a structure is formed which we call a Bursa subcutanea. The fact that the endothelial lining is wanting in these structures, or if present, is incomplete goes a long way to prove the truthfulness of the assumption that these bursæ are formed after the fœtus has left the uterus.

The Bursæ subtendinosæ are much more constant in their appearance than are those under the skin, although individual deviations are not uncommon. They are found at all periods of the animal's life, even the newly-born foal possesses most of the profound bursæ. In six-months-old calves (which are about sixty cm. long), not only are the tendon sheaths present, but also a large number of the subtendinous bursæ; *e.g.*, I have found them as large as walnuts under the insertion tendon of the M. biceps femoris (Triceps abductor femoris), the Bursæ glutii medii (Gluteus maximus), the bursa under the origin of the M. extensor digitorum Pedis longus (Extensor pedis), Bursæ intertubercularis, etc. All these bursæ were relatively larger than they are seen in older animals. In a bovine fœtus thirty-six ct. long many of these bursæ could be found. These facts

* His, "Die Haute und Hölen des Korpers." *Akademisches Programme.* Basel, 1865.

doubtless tend to prove that the sheaths of tendons, as well as the majority of the subtendinous bursæ, are developed before birth, as a result of the mechanical action of the muscles (friction), a circumstance which accounts for their structure and uniform presence. This is our reason also for taking these deep-seated bursæ as the type of these organs, in preference to those found immediately under the cutis. Undoubtedly many of these deep-seated bursæ are formed during extra uterine life, as may be inferred from the absence of many of them; and when they are present they resemble the subcutaneous bursæ in structure, possessing uneven, fibrinous walls. It is not improbable that these occasional bursæ are due to some peculiar method of using the animal, or to pathological changes producing modified movements in certain parts of the body, and as a result rupture of the intermuscular or subfacial connective tissue.

The position of these bursæ are—as mentioned above—either under the ends of muscles or tendons, or on such hard protuberances as these structures play over; and the bursæ are usually united to these structures. Several of the subtendinous bursæ are in communication with tendon sheaths and the capsules of joints; *e.g.*, the Bursæ calcanea with the sheath of the superficial flexor of the phalanges (Gastrocnemius internus), the bursa under the origin of the Flexor metatarsi with the stiffle joint, also with the same joint the bursa situated under the medial (internal) lateral ligament of the joint; at the elbow joint the bursa under the origin of the Flexor metacarpi externus and internus, and the flexors of the phalanges. The last-mentioned is only a blind pouch from the joint capsule itself. Henlé has justly named such sacules *Bursæ synoviales.** According to Heinecke†, the communication between these bursæ and the capsules of joints and tendon sheaths is the result of absorption of the connective tissue which originally existed between them. My examination of these structures in horses leads me to corroborate this statement, because in different individuals these communications may be wanting, whereas in others we find two bursæ united into one; this latter often occurs under pathological conditions such as distension of two adjacent bursæ, the pressure causing their walls to become absorbed.

(*To be continued.*)

MICRO-ORGANISMS AND DISEASE.

BY E. KLEIN, M.D., F.R.S.‡

INTRODUCTION.

THE relation of micro-organisms to the infectious diseases is admitted to be very intimate; and although it may not be quite so universal as some are inclined to assume, it is nevertheless definitely proved to exist as regards some of the infectious maladies affecting man and brutes. In order to pass in review all the ascertained facts and observations in this vast and constantly-growing field of pathology, and to appreciate and to assign their true value to the many observations bearing on this relation of micro-organisms to disease, it is necessary that the reader, and still more the worker in this field, should be enabled to criticise the observations and facts brought forward by the numerous writers on the subject, for otherwise he would probably take as proved what has really not passed beyond the stage of possibility. And it is this point which requires the most careful attention,

* "Handbuch der Banderlehre des Menschen."
† "Anatomie und Pathologie der Schleimbeutel und Scherenscheiden." 1867.
‡ From the "Practitioner."

viz., to be able to see at a glance that, owing to the imperfect or faulty method of investigation employed, or that, owing to certain inferences incompatible with the general laws and general tendency of the well-founded and experimentally proved facts, the statements set forth in a particular observation or series of observations are not to be accepted.

In all investigations of the relation of micro-organisms to disease, it is necessary to bear in mind that, as Koch* has pointed out, no observation can be said to be complete, or, one should rather say, in no instance can it be said to have been *satisfactorily proved*, that a particular infectious disease is due to a particular micro-organism if any one of the following conditions remain unfulfilled :—(1) It is absolutely necessary that the micro-organism in question is present either in the blood or the diseased tissues of man or of an animal suffering or dead from the disease. In this respect great differences exist, for in some infectious diseases the micro-organisms, although present in the diseased tissues, are not present in the blood ; while in others they are present in large numbers in the blood only or in the lymphatics only. These points will be considered hereafter in the special cases. (2) It is necessary to take these micro-organisms from their nidus, from the blood or the tissues as the case may be, to cultivate them artificially in suitable media *i.e.*, outside the animal body, but by such methods as to exclude the accidental introduction into these media of other micro-organisms ; to go on cultivating them from one cultivation to another for several successive generations, in order to obtain them free of every kind of matter derived from the animal body from which they have been taken in the first instance. (3) After having thus cultivated the micro-organisms for several successive generations, it is necessary to re-introduce them into the body of a healthy animal susceptible to the disease, and in this way to show that this animal becomes affected with the same disease as the one from which the organisms were originally derived. (4) And, finally, it is necessary that in this so affected new animal the same micro-organisms should again be found. A particular micro-organism may probably be the cause of a particular disease, but that really and unmistakably it is so can only be inferred with certainty when every one of these desiderata has been satisfied.

It will be my aim in the following pages first to describe the methods that may be employed with success in investigations bearing on the relation of micro-organisms to disease ; secondly, to describe, in conformity with reliable observations, the morphology and physiology of the micro-organisms that bear any relation to disease ; and thirdly, to enumerate the observations that have been made in recent years to prove the existence of such an intimate relation. Last, but not least, we shall consider the precise relation of the particular micro-organisms to the causation of disease.

Chapter I.—Microscopic Examination.

For the examination of micro-organisms good high powers are essential—at the least a power magnifying 300 to 400 linear diameters. Zeiss' D or E, and Zeiss' or Powell and Lealand's oil immersion, $\frac{1}{12}$th or $\frac{1}{18}$th inch will be found sufficient for all purposes. In the case of tissues stained with aniline dyes, a good substage-condenser, such as Abbé's or Powell and Lealand's, is invaluable. I use Zeiss' stand with Abbé's condenser, open diaphragm, and plane mirror. As Koch† pointed out, and what is now universally acted upon, stained specimens mounted in Canada-balsam solution or Dammar

* "Die Milzbrand-impfung." Cassel and Berlin, 1883.

† "Die Aetiologie d. Wundinfectionskrankheiten," p. 34. Leipzig, 1879. Translated as "Traumatic Infective Diseases" (New Syd. Soc.). London, 1880.

varnish, when examined on Abbé's condenser, show the micro-organisms with extreme clearness and sharpness.

The examination of the morphological characters of an organism is carried out on fresh unstained as well as on fresh stained microscopic specimens. Although the latter method is, for reasons hereafter to be mentioned, by far the most perfect and realiable one, it is nevertheless important to ascertain as far as possible the appearances, chemical reactions, and general morphology of perfectly fresh specimens. Blood, juices, tissues, and fluids in which the micro-organisms have been growing, are subjected directly, without any previous preparation, to microscopic examination. With artificial nourishing media in which micro-organisms have been growing, the examination of fresh specimens is of great importance, for the reason that the organisms can be easily identified, and their size and general morphological characters be more correctly ascertained than after drying, hardening, and staining. Besides, the chemical reactions can be satisfactorily studied in fresh specimens only. All one has to do is to draw up with a capillary pipette, or to take up with the point of a needle, a drop or particle of the material, to place it on an object-glass, and to cover it up with a thin cover-glass. Where one has to deal with liquids, such as artificial nourishing fluids, blood, serum, tissue-juices, secretions, transudations, and exudations, no addition is required. In the case of more solid material, such as solid artificial nourishing material, bits of tissue, etc., the addition of a drop of neutral previously well-boiled saline solution (of 0·6 to 0·75 per cent.) is advantageous, although not absolutely necessary, since by pressing down the cover-glass a layer of the material sufficiently thin for examination can be obtained. In some instances a bit of tissue can be teased out into fine particles by means of two clean needles. Where it is a question of micro-organisms sufficiently conspicuous by their shape, size, and general appearance, their identification in the fresh condition is not difficult; this is the case with bacilli, actinomyces, and mycelia, but in the case of micrococci, especially when isolated or in couples, and lying in blood, juices, or tissues, their recognition is often extremely difficult. When in large clumps, such as larger or smaller masses of zoogloea, or when in the shape of chains, the identification is not difficult; but in the more isolated state they are not easily recognised, owing, as a rule, to the presence of granules or particles of various kinds, from which morphologically their distinction is well-nigh impossible. In such cases there are certain rules of thumb, if I may say so, which assist, although they do not absolutely ensure, the diagnosis. These are the micro-chemical reactions. The addition of liquor potassæ leaves micro-organisms quite unaltered, whereas fatty and most albuminous granules alter or altogether disappear by it. Acetic acid from 5 to 10 per cent. strong does not affect micro-organisms, but albuminous or other granules become in most instances altered. These two reagents, I think, are as reliable as any others; if they fail, then others like alcohol, chloroform, sulphuric ether, etc., are not of any greater help, but the latter reagents may be used, for instance, when it is a question between fat-granules and micrococci, or crystals and bacilli.

Micro organisms have a greater affinity for certain dyes, especially analine dyes, and therefore these are used with great success to demonstrate their presence, and to differentiate in many instances morphological details which in the unstained condition are not discernible. The staining is effected on fresh, unaltered organisms, or after they have become dried. In the first instance the process is carried out thus:—A microscopic specimen is made, and to it is added afterwards drop after drop of the dye, passing it through the specimen in the usual way of applying fluids to a microscopic specimen, *i.e.*, by adding with a capillary pipette the dye at one margin of the cover-

glass, and sucking it up with a strip of filter-paper applied to the opposite margin of the cover-glass. When the staining has taken place, the excess of the dye is washed away with salt solution, water, or alcohol, or both, as the case may be (see below). Unless the organisms are embedded in continuous masses of solids, this method gives good results. In the latter case, say if they were embedded in a microscopic lump of tissue, or in a particular spot of a fine section of fresh tissue, it is necessary, after having placed the lump or section on an object-glass, to drop the dye on to this previous to putting on the cover-glass. After some minutes the dye is allowed to run off by inclining the object-glass, and then the washing is proceeded with till all the excess of the dye is removed; the mounting is then done by placing a drop of water or salt solution on the specimen and covering it with a cover-glass. In the case of sections through fresh and hardened tissues containing micro-organisms, the method of staining and of permanently mounting them as a whole is more complicated, and will be detailed presently. When one has to deal with coherent masses of micro-organisms, present either in natural media (*i.e.*, animal tissue), or artificial cultivations, such as zoogloea and pellicles of *micrococcus* or *bacterium*, these can be bodily transferred to a watch-glass, stained, washed, and mounted without much difficulty, either for immediate or permanent use. The permanent specimens are made in this way:—Place the sections or pellicle in a watch-glass containing the dye, leave it there till deeply tinted, take out with a needle, or the like, wash in water, then in alcohol, leave here for five minutes or more till most of the excess of the colouring-matter is removed, then lift it on to an object-glass, spread well out, place on it a drop of clove oil, and after a minute or two drain off the clove oil, add a drop of Canada-balsam solution (in chloroform or benzol), and cover with a cover-glass. In some special instances, such as the bacilli of Leprosy and Tuberculosis, double staining is required. With other organisms, such as the bacilli of Glanders or Tuberculosis, the washing is carried out, not with water, but with acid (acetic acid and nitric acid respectively). All these details will be stated when dealing with these special organisms.

The method extensively and successfully used for the demonstration and preservation of microscopic specimens of micro-organisms in fluids, as blood, pus, and juices, is that of Weigert and Koch, which consists in spreading out on a glass slide or cover-glass a very thin film—the thinner the better—of the fluid (artificial or natural culture medium), blood, pus, or juice, and drying it rapidly by passing it several times over the flame of a spirit-lamp or gas-burner. The most successful preparations are obtained when the heating is carried on for such a time (one or two minutes) that the film, having become opaque at first, rapidly turns transparent. Several drops of the aniline dye to be used are then poured over the specimen, and after remaining on it from five to thirty minutes or more, are poured off. The aniline dyes used are those that are commonly known as having a great affinity for cell-nuclei (Hermann); they are also known as the neutral or basic, but not the acid ones. The most useful aniline dyes amongst them are those that are soluble in water; these are preferable to those soluble in alcohol, but in certain special instances (to be mentioned hereafter) some of them are of definite use. Methyl-blue, methyl-violet, vesuvin, Bismarck-brown, magenta, fuchsin, rosanilin, gentian-violet, Spiller's purple, eosin, dahlia, purpurin, iodine-green, are the aniline dyes commonly used. The washing is carried out in all cases, except with tubercle-bacilli and the bacilli of Glanders, with distilled water, then with alcohol; this latter, as a rule, is to wash out the dye from all parts except the micro-organisms, and it is therefore necessary not to carry the washing further than this, but to carry it as far as practicable. After this, wash again with distilled water, dry, and mount in a drop of Canada-

balsam solution. Throughout this process it is of course necessary always to remember on which side of the glass the specimen has been dried.

Double staining is carried out with any two of the above dyes; as a rule, a brown and blue or violet, or a red and blue, are preferred. Some of the voilet and purple dyes have the peculiarity that in some—not in all instances—they give to the preparation a double tint—some things appear blue, others more pink.

The process of double staining is carried out either for each dye separately—*i.e.*, we first apply one dye, after some minutes wash in distilled water, and then apply the second dye—or the two dyes to be used are mixed and then used like a single dye.

In the case of tubercle-bacilli the staining is first done with a magenta mixture (Ehrlich's, Weigert's, or Gibbes'), then washed for a few seconds with a 10 per cent. solution of nitric acid, then for a few minutes with distilled water. After this the preparation is stained with methyl-blue in the ordinary way. Or, after Koch's method, the specimen is first stained in alkaline methyl-blue (mixed with a 10 per cent. solution of caustic potash) for twenty-four hours, dried for half an hour to one hour at a temperature of 40° C., and then stained in a concentrated solution of vesuvin. Wash it next with water, then with alcohol, dry, and mount in Canada-balsam solution.

In Leprosy, the specimen on the glass is stained with magenta, then washed in distilled water, then stained with methyl-blue, washed and mounted. With such organisms — as, *e.g.*, the micrococcus in the sputum of acute croupous pneumonia, and the micrococcus in gonorrhœal discharge—the staining is best carried out with a mixture of methyl-blue and vesuvin.

Weigert's double stain is very excellent for many purposes; it is prepared thus:—

Saturated watery solution of aniline, 100 ccm.

[This is made thus:—Aniline oil, 1 part, dist. water, 3 parts. Shake every half-hour for four hours, and decant the water as the oil settles to the bottom.]

Saturated alcoholic solution of fuchsin, 11 ccm. Mix.

The sections are well-stained in this mixture, then washed in distilled water; after this they are immersed for a few seconds in alcohol, and then transferred for one, two, or three hours to the following solution:—

Distilled water, 100 ccm.
Saturated alcoholic solution of methyl-blue, 20 ccm.
Formic acid, 10 minims.

After this, wash in alcohol, pass through clove oil, and mount in Canada-balsam solution.

In examining fresh or hardened tissues for micro-organisms, it is necessary to make thin sections, which can be easily done with the aid of any of the microtomes in common use, amongst which Williams' microtome, and especially Dr. Roy's ether-spray freezing microtome, are no doubt the best and easiest to manipulate. As regards hardened material, it is necessary to remember that the hardening must be carried out properly, small bits—about a half to one cubic inch—of tissue being placed in alcohol, or, better, in Müller's fluid, and kept there; in the first instance, for two to five days; in the second, for from one to three weeks or more. Then small bits are cut out, of which it is desired to make sections. Those hardened in spirit must be soaked well in water to enable the material to freeze, then superficially dried with blotting-paper, and then used for cutting sections with Roy's microtome Those hardened in Müller's fluid are at once superficially dried with blotting-

paper and cut. When making sections with Williams' freezing microtome, it is necessary to soak the material first in gum mucilage, and then to freeze and to cut. Fresh tissues are at once cut with the freezing microtome, the sections placed in 0·6 per cent. of saline solution, floated out and well spread out, and then stained by transferring them in this condition, *i.e.*, well spread out, into a watch-glass containing the dye. The sections of hardened tissues are floated out in water, well spread out, and then transferred to the dye or dyes as the case may be.

It is necessary to prevent too much shrinking of the sections, especially those of fresh tissues; for this reason it is advisable to float the sections in the saline solution or water, as the case may be, on a broad lifter or spatula, to spread them well out upon it, and to transfer them carefully into the dye, then into the dish with water used for washing off the excess of the dye, to transfer them, well spread out on the lifter, to alcohol, then after several minutes to oil of cloves, and finally on to a glass slide, on which they are mounted in the usual manner with Canada-balsam solution, the excess of clove-oil being previously drained off.

Chapter II.—Preparation of Culture Material.

Artificial cultivations of micro-organisms in suitable nourishing media in the incubator, at temperatures varying between 30° and 40° C., are necessary in order to study more accurately the life-history of the septic as well as the pathogenic organisms. Moreover, large numbers of them become thereby available, and their exact relation to disease can thus be tested more conveniently. For if it should be found that, having carried on outside the animal body successive cultivations of a particular organism, the reintroduction of this cultivated organism into the animal body is again productive of the same disorder as before, then the conclusion becomes inevitable that this organism is intimately related to the causation of the disease. It must be conceded that after several successive cultivations any hypothetical substance supposed to be the *materies morbi*, and introduced at the first remove from the blood or tissues, being in a very diluted condition in the first cultivation, would after several cultivations be practically lost. But if this last cultivation should be found to act in the same manner pathogenically, *i.e.*, if every droplet of it, charged with the new brood of the organism, nevertheless possesses full pathogenic power, then it is logical to say that this pathogenic property rests with the organism. For this and other reasons it is of essential importance to be able to carry on successive cultivations of one and the same organism without any accidental contamination or admixture—*i.e.*, it is necessary to carry on *pure cultivations.*

A.—*Fluids.*

As fluid nourishing material the following are used with preference:—

1. *Broth made from meat—pork, beef, rabbit, chicken.*—The connective tissue and fat are first cut out from the fresh meat—in the case of rabbit or chicken, the whole animal without head or viscera is used—and then placed in water and boiled. Generally for each pound half an hour's good boiling is allowed. With regard to the quantity of water, each pound of meat ought to yield ultimately at least one pint of broth. When boiled, the broth is allowed to stand, the fat is skimmed off, and the broth well neutralised by adding liquor potassæ, or, better still, carbonate of sodium.

The fresher the meat the less acid (sarcolactic acid) is in the broth before neutralisation. The broth is then filtered through a filter, previously over-heated, into flasks previously sterilised. If the broth is not clear after once filtering, it is filtered again. If not clear then,

it is allowed to stand for several hours. A fine sediment is found at the bottom of the vessel, and from this the clear supernatant fluid is decanted into a sterilised vessel. The broth, if not clear after the first filtering, can be cleared by boiling it with the white of an egg. The now clear fluid is filtered again. The flasks which receive the broth are well plugged with sterilised cotton-wool. In this state the flask is placed over a Bunsen burner on a wire netting and boiled for half an hour or more; during the boiling the cotton-wool plug is lifted out for half its length. The flask ought not to contain more broth than about one-half or two-thirds of its volume, to prevent the broth from rising too much and wetting the plug. When turning off the flame the plug is pushed down so as fully to plug the neck and mouth of the flask; a beaker with sterile cotton-wool cap is placed over the mouth of the flask, and this is allowed to stand for one night. Next day the boiling is repeated for half an hour or more in the same manner as before. If the meat has been fresh and the vessels and cotton-wool have been sterile, twice boiling is found sufficient to destroy every impurity. But to make sure, the broth is placed in the incubator and kept there for twenty-four hours at a temperature of 32°—38° C., and then boiled on the next day for half an hour in the usual way. The supposition is made that if by any chance after twice boiling the broth it should contain unchanged spores of bacilli—the only organisms that will resist boiling, although they do not resist boiling for more than half an hour—the spores would germinate into bacilli when kept for twenty-fours hours in the incubator at 32°—38°, and these would then be killed by the third boiling. As a matter of fact, I have not as a rule found any contaminating germs survive the second boiling. It is of course to be borne in mind that during the first as well as second and subsequent boiling the cotton-wool plug is not removed from the mouth of the flask, but is only raised out half its length from the neck. The cotton-wool and the cotton-wool cap and beaker are replaced immediately or simultaneously with the turning off of the burner. This broth so prepared is placed in the incubator at 32°—38° C., and kept there from one to three weeks. If, as is generally the case, it remains limpid, it is considered completely sterile.

2. *Peptone and Sugar Solution.*—Beef peptone (Savory and Moore's) is dissolved in distilled water, over a burner, to the amount of about 2 per cent.; to the solution is added cane-sugar to the amount of about 1 per cent., so that every 100 ccm. of the fluid contains two grammes of peptone and one gramme of sugar. When dissolved, it is well neutralised and then filtered (the vessels being of course also in this, as in all other cases, sterilised by overheating) into flasks, and treated in the same manner as the broth.

The same fluid can be used without the addition of the cane-sugar.

3. *Buchner's Fluid.*—10 parts of Liebig's extract, and 8 parts of peptone, in 1,000 parts of water.

4. *Hydrocele Fluid* (Koch).—A new or well sterilised (by overheating) trocar and cannula are used for the tapping; to the cannula is fixed an indiarubber tube that has been soaking in strong carbolic acid solution for forty-eight hours. The distal end of the tube is introduced carefully and rapidly into the neck of a sterilised flask plugged with sterile cotton-wool, and the fluid thus allowed to flow into the flask to about two-thirds of its volume.

This is then exposed in a water or sand-bath to a temperature of from 58° to 62° C. for three to five hours on five or six consecutive days. Placed then into the incubator at 32°—38° C. for from one to three weeks, the fluid remains limpid.

(*To be continued.*)

Reviews.

THE RELATION OF ANIMAL DISEASES TO THE PUBLIC HEALTH, AND THEIR PREVENTION. By FRANK S. BILLINGS, D.V.S. (New York : Appleton and Co.)

Mr. Billings, who is a graduate of the Berlin Veterinary Institute, has compiled, chiefly from German and English books, a work which is, as the preface states, "for the benefit of the people of the United States," with the object of introducing "to every man and woman of the country a new subject—the higher purposes of veterinary medicine." And, immediately after, it is written : "While, at times, the language of the author may appear unnecessarily severe to the casual reader, he should not forget that the author is an enthusiast." The intimation was necessary, for a more extraordinary production, so far as severity, unfairness, and abuse are concerned, we have not met with for a long time. Mr. Billings is, doubtless, an enthusiast, but he is also something besides ; and that something will detract, not only from his first literary venture, but from all the good that his enthusiasm might otherwise effect. No profession is ever much benefited by such enthusiasts.

The book contains 441 pages, but only 208 of these are devoted to animal diseases, the remainder being occupied with a brief but disjointed history of veterinary medicine ; a long disquisition, at second hand, on the establishment of European veterinary schools ; a discourse on the advantages to be obtained by the institution in the United States of a national veterinary police system ; and a strong chapter or section on the necessity for establishing a national veterinary institute in the States. Our American cousins have abundant enterprise, plenty of spare dollars, and great numbers of animals of various kinds, which require, at some time or other, the services of veterinary surgeons to protect them from contagious disorders, or treat them when sick or injured. It pays a country to have well-educated and well-trained veterinarians, and if the States, individually or collectively, can be made to understand this and act upon it, then so much the better for that great continent. It may be doubted, however, whether the author of this book is the man to effect such a revolution. His manner is too *brusque*, his language is too *bizarre* and egotistical, and his advocacy too violent and aggressive, to convince the incredulous, gain the support of the well-disposed, or convert opponents into firm friends.

There is, as might be expected, nothing novel in the first portion of the book—that relating to those diseases of animals which endanger the public health—except the curious bastard English in which much of it is written, and which the author's German professional training is responsible for, but which the American public—*every man and woman*—will be immensely puzzled to understand. Indeed, we question if there are many veterinarians or medical men in the States, or anywhere else, who will readily comprehend some of the expressions. For instance, at page 7, in treating of Trichiniasis, he states that the parasites are not equally distributed over the "musculature of the autosite," which means, we

presume, the muscles of the infested animal; at page 13 we find "mesenterium" instead of mesentery, "*trichin* infected flesh;" and elsewhere "cadavers," "the *ens* of disease," "scientific researcher," and so on.

With regard to unfairness, we may note that in the chapter on Swine Plague, or "Hog Cholera," as he heads it, he states (p. 42) that American veterinarians established beyond doubt the true nature of the disease; and gives to Law and Detmers the credit of having discovered the bacilli peculiar to the disease. This discovery was made in this country by Klein, and the first to point out the infecto-contagious nature of the malady, as well as its morbid anatomy, was Dr. Budd, of Bristol. Not only this, but this author adopts, without acknowledgment, the name given to this disorder by Klein—*Pneumo-Enteritis Contagiosa.* Klein's researches have been more important and original than any yet attempted in the States. Then again, with regard to Emphysema Infectiosum, he has the temerity to assert that Professor Feser is the only one, with Bollinger, who has given any special study to the disease. He might, or should, have known that Arloing, Cornevin, and Thomas, in France, have studied it for years in the most successful manner; that their discoveries have been presented at various times to the Paris Academy of Medicine and Academy of Sciences, that the success of their prophylactic inoculation has been fully established, and that a most complete monograph, entitled, "Charbon Bacterien, ou Charbon Symptomatique," was published at the commencement of last year. But Mr. Billings evidently knows little, if anything, of what has been done in recent times by French veterinarians.

One example of his style of disparagement will suffice. In treating of Texas Fever, he writes:—

"My own studies have been made upon the report of John Gamgee to the Commissioners of Agriculture of the United States on Animal Diseases, and published in 1871. I wish it were possible for me to say one single word in favour of this report. It is a disgrace to the Veterinary profession, to the man who wrote it, and to the Government which published it. It is a miserably arranged, illogical, and erroneous production. Symptoms, definition, and periods, are mixed up, and there is no connection between the parts. The pathological anatomy is simply abominable, and one which I should be ashamed to have a student produce."

This is pretty much the style in which the book is written. Unable to furnish any information himself, he utilises what has been provided by others, and if they be other than American or German, he abuses them.

We have said enough to show that this is not a book to benefit the veterinary profession in any way, nor yet will it confer any advantage on the United States. It is dedicated to the memory of Professor Gerlach, late director of the Berlin Veterinary Institute. We fancy Gerlach, if alive, would have been inclined to refuse the dedication, had he known the character of the work.

ANIMAL CASTRATION. By A. LIAUTARD, M.D., H.F.R.C.V.S. (New York: Jenkins.)

In a handy book the Principal of the American Veterinary College has treated the subject of castration in a clear and concise manner. The various methods of operating, the preparation, risks, and consecutive treatment are dealt with very satisfactorily. The book is embellished with forty-four woodcuts, which materially enhance its value, and permit us to recommend it as an eminently trustworthy guide, for young veterinary practitioners especially.

VETERINARY NOTES FOR HORSE OWNERS. Third Edition. By M. HORACE HAYES, M.R.C.V.S. (London: W. Thacker and Co.)

Captain Hayes, in the new edition of "Veterinary Notes," just published, has added considerably to its value by including matter which was omitted in the former editions, and rendered the book, if larger, at any rate more useful to those non-professional people who may be inclined or compelled to treat their own horses when sick or injured. So far as we are able to judge, the book leaves nothing to be desired on the score of lucidity and comprehensiveness; and though it is impossible to teach practical and manual details in veterinary medicine and surgery to amateurs by means of books only, yet readers of these notes may learn something of the more common diseases and accidents to which the horse is liable. Beyond this the author does not evidently intend to carry his instruction.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD OCTOBER 2ND, 1884.

Professor WALLEY, President, in the Chair.

Present:—Gen. Sir F. Fitzwygram, M.P.; Professors Robertson, McCall, Williams, and Pritchard; Messrs. Cartledge, Wragg, Perrins, Barford, Dray, Santy, Woods, Cartwright, Greaves, Borthwick, Taylor, Whittle, Duguid, Blakeway, and the Secretary.

The SECRETARY read the notice convening the meeting.

The minutes of the previous meeting were taken as read.

Absentees.

Letters were read from Messrs. Cox, Walters, Fleming, Brown, Lambert, Simcocks, and Reynolds, regretting their inability to attend.

Illness of Dr. Fleming.

The PRESIDENT called attention to the illness of Dr. Fleming, and said that those present must all be aware of Dr. Fleming's labours on the Council for the good of the profession, and he thought the least they could do would be to pass a vote of sympathy with him, and Mrs. Fleming, in his illness.

Mr. DRAY seconded the motion, which was carried unanimously.

Presentations to the Library.

The following works have been received :—"Journal de Médecine Vétérinaire et de Zootechnie;" "Lehrbuch der Thierartzlichen Geburtshilfe," by Prof. Dr. Garsten Harms; "A Text-Book of Operative Surgery," by Dr. George Fleming; and the "Annual Report of the Agricultural Department, Privy Council Office," for 1883.

Correspondence.

A letter from Professor P. Heaton, acknowledging his appointment as an Examiner in Chemistry, and also a letter from Mr. George Thatcher, thanking the Council for his appointment to the office of College Solicitor. There was also read a communication from the Privy Council, stating that they had received a complaint from a registered practitioner of the heading put to the No. 3 Register, which was to the effect that, as the existing practitioners had not undergone the qualifying test as prescribed by the Royal College of Veterinary Surgeons, the Council could not be held responsible for their professional qualifications.

Professor ROBERTSON thought the Council should not have inserted the heading complained of, and he had objected to it when it was agreed to be passed by the Registration Committee

Professor WILLIAMS moved, "That the opinion of the College Solicitor be taken on the matter."

Mr. TAYLOR seconded the motion. If the solicitor said that it was not illegal, they could write to the Privy Council to that effect.

Mr. CARTLEDGE said that inasmuch as these registered practitioners had undergone no examination by the College, he could not see how the Council could be responsible for their qualifications, and he failed also to see the injustice of heading the register in the way named. The Council were asked for an opinion, and he thought they might take upon them to say that they believed they had acted according to the rights of the College in what they had done. A simple answer would no doubt be satisfactory to the Privy Council, because the legality of the proceeding had not been questioned; but Professor Williams' motion would bring them face to face with that point, and then if it was found they had acted illegally they would have to draw in their horns.

Professor MCCALL did not think that the matter was one in which there was anything legal or illegal The men had not passed the College examinations, and therefore ought not to be recognised.

Mr. CARTLEDGE said he would move as an amendment that the Council reply to the Privy Council without resorting to the solicitor for an opinion.

Professor MCCALL seconded the amendment.

Mr. GREAVES supported the amendment, and remarked that their late President was strongly of opinion that the clause in question should be inserted.

The PRESIDENT was of opinion that to place the names of a number of men in such a prominent position in the College Register without the addition of some such remark as that alluded to, was simply to make the Council responsible, in the eyes of the public, for their qualifications to practise as veterinary surgeons; he did not see that the least injustice had been done to them.

The amendment was then put, six voting for it; the original motion followed, for which ten voted, and it was therefore declared carried.

The application to the President and Vice-Presidents of the College by Mr. T. W. Mayer asking that the sum of money given by him some years ago to the College Building Fund should be refunded, he being now in pecuniary difficulties, was next considered.

Mr. TAYLOR said he was of opinion the Council had no power to accede to the request, and moved that the money be not refunded.

Mr. CARTWRIGHT seconded the motion.

Professor ROBERTSON said that Mr. Mayer had occupied a very important position in the profession prior to the Charter of 1844 being obtained. He had exerted himself to a considerable extent to get that Charter, and had expended his own money in endeavouring to secure it. He had been a very useful man, but unfortunately he had got into difficulties. All he asked the Council to do was to refund the amount out of a surplus which remained over from the money required to procure the Charter. He (Professor Robertson) was aware that the Council could not do as they were asked, because they were only trustees for another body, but he thought they ought to be made aware of the unfortunate gentleman's position.

Mr. TAYLOR asked if he did not derive an income from the Government.

Professor ROBERTSON said he did; some nine shillings a day, he believed.

Mr. WRAGG said that Mr. Cox had asked him to tell the Council that Mr. Mayer was afraid of being made a bankrupt, and bankruptcy would mean a stoppage of his pension, and £40 or £50 would put him right again.

Professor PRITCHARD considered that the Council had no power to refund the money.

Mr. GREAVES suggested that, out of respect to a gentleman who had once stood high in the profession, and whom they all respected, a committee should be formed to receive individual subscriptions towards his relief, since the Council was precluded from making use of the College funds.

The CHAIRMAN remarked that, however worthy of consideration the suggestion might be, it was one outside the official duties of the Council, but might be acted upon by any individual member.

The Secretary was ultimately instructed to write to Mr. Mayer, and express the regret of the Council at not being able to refund the money.

The application of Mr. John Dobson, practising in Manitoba, for a certificate, his diploma having been destroyed in a fire, was, on the motion of Mr. BARFORD, seconded by Mr. PERRINS, allowed, and the certificate to be granted.

Report of the House and Building Committee.

At the last meeting of the Council the Committee was instructed to purchase the freehold if it could be got, the solicitor of the estate having said that this could be done if sufficient consols were purchased to produce £64 annually, which would require an expenditure of £2176. With regard to the house accommodation for the Secretary, in lieu of the present building, the Committee recommended that the sum of £70 be allowed, dating from June last. At a further meeting of the Committee the agreement between the vendor and Council was read and considered, the Committee recommending that the purchase-money, say £2133 6s 8d. consols, be paid out of the investments in consols. It was also recommended that the architect's estimate of £3500 be approved with the proviso that it did not exceed this amount, and that any excess incurred above the required sum be paid out of the General Account of the College.

Council Account.

Mr. TAYLOR asked why the sum for the Secretary's loss of residence should commence from the last summer meeting, when his change of residence did not begin till September 29th.

It was pointed out that the Secretary had been obliged to leave the College in June, because there were not the necessary conveniences to enable him to live there, as reported previously.

Mr. CARTLEDGE proposed that the recommendation of the Committee should be adopted.

Professor WILLIAMS seconded the motion.

The PRESIDENT said the amount was granted to the Secretary in lieu of house, gas, rates, taxes, etc., and explained that to provide the Secretary with a new building would require an extra expenditure of about £2,000 to £3,000, so that the plan proposed would be really a saving to the College.

Mr. TAYLOR said most likely a caretaker would be required for the new premises, which would be an additional expense. He thought the Council were making too great strides.

The PRESIDENT said the caretaker's wages would not be more than £20 a year.

Mr. TAYLOR said that when the expenses of the freehold and building were paid, it would not leave more than £2,000 in hand.

The PRESIDENT said that he had strong hopes that there would be no necessity to touch the General Fund of the College; he had not, for various reasons, subscribed himself, but he was ready to give his mite, and he was quite sure that when once matters were put into proper shape there would be numbers of members of the profession in Scotland, as in England and Ireland, who would give a helping hand.

Sir FREDK. FITZWYGRAM then went into details of the necessary expenditure in connection with the new building.

The motion for the adoption of the report was then put and agreed to, the President being empowered to sign the agreement for the purchase of the site.

Consideration of Plans.

Mr. TAYLOR asked what security would be given that the entire cost of the new building would not exceed £6,500.

The PRESIDENT said they were not bound down to that price. That was the architect's estimate, and they would probably accept the tenders for the work that were within that estimate.

The plans were agreed to.

Mr. BARFORD moved and Mr. PERRINS seconded, that the tenders to be invited be examined by the Committee, and all arrangements be left to them to carry out.

General Sir F. FITZWYGRAM suggested the addition of the words, "If the architect's estimate is exceeded, reference to be made to the Council."

The suggestion was agreed to by the mover and seconder, and the motion, with this addition, was agreed to.

Mr. DRAY stated that the solicitor had declared the title to be very clear, and that there were no mortgages.

The architect was instructed to draw out specifications, and the Secretary was instructed to ask for tenders for the work from a limited number of builders, say five.

The Finance Committee.

According to the report of this Committee, the liabilities, which it is recommended should be discharged, amount to £123 15s. 4d. The Committee recommend that the refreshments hitherto supplied to the students, Examiners, and Council, be discontinued, and that the students, after each being examined, should leave the College, and return, at the expiration of the examination, to learn the result, instead of being confined, as was now the case, within the building.

After some discussion on the inconvenience arising in Scotland from the students congregating with their companions at the entrance of the hired buildings in which the examinations were held, it was agreed that hence-

forth the examinations should be held at the two Edinburgh colleges alternately, it being considered that the students would then be more under the control of the principals, and the cost of a hired hall saved to the College.

Mr. DRAY, speaking on the matter of refreshments, thought that the Examiners, being very well paid, might pay for their own refreshments. The refreshments for students was an innovation of late years. When he was a student they were not supplied, and he did not see the need for them now.

Mr. CARTLEDGE said that a cup of tea or coffee was very acceptable to the Examiners after three or four hours' work. The cost to the College must be very trifling.

Gen. Sir F. FITZWYGRAM moved that the recommendation be not accepted. He thought something ought to be provided for the Examiners, the students, and the Council.

Mr. WHITTLE seconded the motion, which was agreed to.

The offer of the Principals of the Edinburgh schools to accommodate the Examiners was accepted.

Cheques for the current expenses were ordered to be signed.

Court of Examiners.

The SECRETARY read the result of the examination held by the Scottish section of the Board of Examiners in July last.

Additional Examiners for the Final Examination.

Professor MCCALL proposed that at the C or final examination Examiners be such as is indicated by Bye-law 7, relating to examinations; that is to say, that two separate and distinct individual Examiners conduct each department or section of that examination. The effect of that, said the Professor, would be that four additional Examiners would need to be appointed. If it had been possible he could have wished to increase the Examiners for the A and B examinations, but he could not see his way to it. The Council was enabled by the bye-laws to appoint a sufficient number, not exceeding twenty-two persons, to constitute a Court of Examiners; but, instead of there being twenty-two, the Court now consisted of twelve members only. There would be no additional expense if the full complement was made up, because they would not all be required, although they might be appointed. The Council would always nominate who should examine, and out of twenty-two the very best men could be selected. The paucity of Examiners greatly prolonged the examinations, which entailed expense to the students and inconvenience to the Examiners. The present Examiners did double duty; they examined both practically and orally. He did not mean to say that they did not carry out their duties satisfactorily, but their labours would be much expedited if four other gentlemen assisted them. Considering the large sums received by Examiners annually, he thought the item of travelling expenses should be abolished, and a fixed fee paid them.

Professor ROBERTSON, in seconding the motion, said, that in the north there was a great anxiety to have this motion carried, the feeling there being strong that the Examining Board had been too largely taken up by men south of the Tweed.

The PRESIDENT supported the motion, remarking that there could be no stronger argument in its favour than that the Examiners had really more work than they could possibly do with entire satisfaction or comfort to themselves. When the present Board was appointed, he proposed that the whole of the Examining Board should be enlarged, but it was not listened to. Practically, the Board consisted of eight men; and he held that addi-

tions should be made to the Examiners in every examination, and not be confined to the final. There were only two examiners on pathology and morbid anatomy, and if anything happened to either or both of them the Council would be at a loss who to appoint in their stead. There ought, therefore, to be a sufficient number appointed to fill up all blanks. In Edinburgh, on one occasion, one gentleman positively did the work of three Examiners, owing to the Board being so small.

Mr. WHITTLE also supported the motion, and regretted that it did not go in for an increase all round. A great deal of travelling expenses might be saved if some re-arrangement of the localities from which Examiners were taken was made. He believed there was no Examiner from Ireland, and he should like to see one appointed from that country, and also from Scotland.

Mr. GREAVES was always ready to agree to any plan that would increase the efficiency of the Examining Board. The Council had endeavoured for years to make the examinations uniform in England and Scotland, and so the same Examiners carried out their work in both countries, which necessarily entailed great expense in railway travelling; but he did not think that was wrong in principle, for it ensured the examinations being equal at each of the colleges. If men could be procured out of Scotland who would examine as efficiently as did the London men, then, of course, much expense might be saved in travelling. He saw no objection to the number of Examiners being increased.

Mr. TAYLOR said the present Examiners were appointed for five years, and he thought the Council had no power to elect fresh Examiners in the middle of that period. As an amendment he would propose, that the question be submitted to a committee to be appointed by the Council.

Professor PRITCHARD seconded the amendment, which was put and lost, the original motion being carried by a large majority.

A ballot was then taken for the purpose of electing the four additional Examiners, and out of seven gentlemen proposed the following were declared elected:—Messrs. Cartledge, Borthwick, Woods, and Greaves.

It was decided that it should be left to the Examiners to settle which of them should examine on cattle and which on the horse.

Marks at Examinations.

Professor ROBERTSON asked for a statement from the Council of the marks that rejected a man. When he examined for the College twenty years ago, one "bad" always rejected a man, as did two "indifferents." Now, men were being rejected with one "indifferent." He proposed that the Council pronounce upon the marks that should reject a candidate.

Professor MCCALL seconded the motion, which was agreed to.

Mr. SANTY then moved that the old marks should stand two "indifferents" to equal one bad.

Mr. BLAKEWAY seconded the motion, which was carried.

A Syllabus.

The PRESIDENT moved that a syllabus be prepared, so that it would be possible to know on what a student was to be examined. Under existing arrangements a student was sometimes examined three times on the same subject.

Professor WILLIAMS complained that there was no examination on materia medica at all. Over and over again he had seen men examined twice on one subject. The major part of the time was exhausted on anatomy and physiology, and sometimes on chemistry—indeed, he had heard it asked at the pathology table: "What is the combustion of coal?"

The PRESIDENT said that Fever was purely and simply a pathological subject, and yet it was examined upon at all the tables.

Professor WILLIAMS seconded the motion.

Professor ROBERTSON was disinclined to support the motion, thinking that it ought to be left to the judgment of the Examiners as to what they would examine upon.

Professor MCCALL suggested the withdrawal of the motion. Now that the mistake had been mentioned, the Examiners would probably see that it did not happen again.

The PRESIDENT said it had always happened in the past, and would continue to happen in the future, if some definite plan was not followed; and it frequently occurred that a student was examined upon the same subject at every table with the result that, if he happened to be well up in that particular subject, he passed a brilliant examination; but if, on the contrary, he was deficient in the one point he was rejected, no matter how well up he might be in others; and when a student presented himself at any particular table, anticipating an examination on a certain subject, his equilibrium was as a rule thoroughly upset when questions were put to him on totally different subjects.

Professor PRITCHARD said that was a matter of opinion.

The PRESIDENT replied that it was a fact. He further said that he would alter his motion, so that it should read: "That the Examiners be instructed to draw up a syllabus, and that the syllabus be sent to the various schools." The motion was then put and carried.

Mr. Rutherford's Salary.

The PRESIDENT proposed that the amount paid Mr. Rutherford be increased to £50 for his services to the Board of Examiners in Scotland. His salary now was £31 10s., and for that he had to attend to the examinations at Edinburgh and Glasgow, and was instructed to see that everything in connection with them was carried out properly. An Examiner alone would get, say, £130 during the year, while Mr. Rutherford had only £31 10s.

Professor PRITCHARD acknowledged the apparent excess in favour of the Examiner, but said that to earn the £130 meant leaving business and losing £200. He would second the motion, but he could not allow the President to say that comparatively the Examiners receive three times as much as Mr. Rutherford. Many of them lost a great deal of money by attending the Board.

The PRESIDENT replied that Mr. Rutherford had to neglect his business also to attend to the interests of the College.

Mr. GREAVES supported the motion.

Professor MCCALL could speak to the efficient manner in which Mr. Rutherford discharged his duty, and he was sure deserved well of the College.

The resolution was agreed to.

Notice of Motion.

General Sir F. FITZWYGRAM gave notice that at the next meeting he would move, "That an additional Examiner be appointed to each table."

Obituary.

The SECRETARY reported the deaths that had occurred since the last meeting, amongst them being Mr. James Freeman (Hull) and Mr. S. H. Withers (London).

On the motion of Mr. DRAY, seconded by Mr. SANTY, votes of condolence were passed to Mrs. Freeman and Mrs. Withers, and their respective families, in their bereavement.

The Law of Warranty.

General Sir F. FITZWYGRAM said that as there was a great deal of uncertainty about the law of warranty, he thought it would be a good thing for the Council to appoint a committee to draw up some Bill on the subject, which might be presented to Parliament. The result might be a measure beneficial to buyers and sellers, and creditable to the profession.

The PRESIDENT asked Sir Frederick if he would present a bill on the subject to Parliament, and on his answering in the affirmative it was decided that the subject should be considered at the next meeting.

The proceedings then terminated with a vote of thanks to the President.

LINCOLNSHIRE VETERINARY MEDICAL SOCIETY.

THE usual quarterly meeting of the Society was held at the Bristol Arms Hotel, Sleaford, on Thursday, the 9th October, 1884, the President, J. Mackinder, Esq., in the chair. Present:—Captain Russell, Grantham; Mr. J. Hoole, Sleaford; Mr. Hardy, Sleaford; Mr. Runciman, Market Deeping; Mr. T. E. Smith, Market Rasen; Mr. Gresswell, Peterborough; Mr. J. Smith, Louth; Mr. Gooch, Stamford; Mr. W. Hoole, Heckington; Mr. F. Spencer, Wragby, Hon. Sec. Apologies for non-attendance:—Professor Robertson, London; Mr. Loft, Grimsby; Professor Walley, Edinburgh; Mr. Field, Grimsby; Mr. Bland, Boston; Mr. Howse, Lincoln; Mr. Goodall, Melton; Mr. Carless, Lincoln; Mr. Osborne, Fulston.

The minutes having been read and approved, on the motion of Captain RUSSELL it was resolved that Rule vi. be obliterated, and that it be left to the President and Secretary to name the day and hour of future meetings, to suit the convenience and time of the members; and that the words "last Thursday" be omitted from Rule v., this being a confirmation of the motion passed at the Gainsborough meeting. With reference to the suggested purchase of costly instruments by the Society, for the use of the members, the President said he found at Norwich that the Norfolk Society purchased several of the most expensive instruments, and any members requiring them paid the carriage, and returned them directly after use. Mr. Taylor, of Manchester, stated at the last meeting he did not think they would be often used, but he was sure for country practitioners they would be very useful, especially such an instrument as Santy's tooth forceps. Captain RUSSELL, after a brief discussion, proposed, and Mr. RUNCIMAN seconded, and it was unanimously carried, that the matter of instruments be left to the next meeting, and that it be placed on the agenda paper; the Treasurer, in the meantime, to look up the subscriptions and submit a statement. A letter was read from Professor Walley, M.P., speaking of the formation of a British Veterinary Club in connection with the new college buildings, and the Secretary was instructed to write to him with a view of obtaining particulars of the scheme.

The following paper was then read by Mr. T. E. SMITH, M.R.C.V.S. Market Rasen, on "Parturition.'

Mr. President and Gentlemen,—At the last meeting of this Society, held at Gainsborough, at which I was sorry so many of our members were unable to be present, Mr. Greaves very kindly came from Manchester and gave us a very interesting and instructive paper on "Glanders in the Horse; its Nature and Prevention." He suggested, in his closing remarks, that a subject such as parturition would be very interesting to town practitioners, such as him-

self, who saw so few of these cases. As no one at that meeting volunteered a paper for discussion, I have ventured to bring that subject before you to-day, not that I have anything new to speak of, but as these associations are formed for a friendly and impartial exchange of opinion, I hope my few practical remarks may lead to a good discussion, and we may all benefit therefrom. I have heard members of our profession say they would not attend a cow calving, or take a foal from a mare; but in my opinion we, whose lots are cast in country districts, must take cases as they come, and it is our bounden duty to do the best we can to relieve our patients in the most scientific manner and with the infliction of the least possible pain. Of the act of parturition in the natural state, it is useless for me to speak amongst practical men such as yourselves, who are all or mostly engaged in country practice, as it is so well known to you, and to which we are rarely called. It is to the unnatural or abnormal presentations most commonly met with, and the best means to relieve them, I wish for a short time to draw your attention. This subject, gentlemen, in theory is about the easiest I know. Read what work we may, after the description of the case, we are told to put a hook in here or there, pass a cord round the legs, and many other ways, which no doubt are perfectly correct; but in practice, during the twenty-one years I have been connected with the profession, I have not found anything which requires so much common sense, tact, patience and perseverance. I will, with your permission, divide my subject into its various parts, and treat each as I proceed. Before doing so, however, I would like to make these few general suggestions: We must first examine the state of our patient, and if parturient pains are very severe, give a dose of chloral hydrate or other sedative; very carefully examine as to the position of the fœtus, and consider the best means to be adopted for its extraction; have sufficient help and everything ready likely to be required; but never on any account attempt to remove it until righted. The first position to which I shall call your attention is the head presented, and the leg, or legs, doubled back. This to my mind, with ordinary care and manipulation, is one of the most simple we have to deal with. First of all I would say, ascertain the exact position of the legs, whether straight out or under the body, or doubled at the knee.

If the former, pass a cord round the arm, work it down with your fingers to the bend of the knee, draw that gently up until the foot can be reached. When that is practicable, take the foot into the palm of the hand, pass back the fœtus by the head, and gently draw until it can be straightened. If both, treat the other in the same manner. Having succeeded in that, attach cords round each above the fetlocks, use regular but not violent pressure, and you will succeed in extracting the fœtus. I am very fond myself of a pair of pulleys for this purpose. My reason for drawing the foot up by the hand is that it may not be forced, either by the parturient pains or the traction on the cords, through the walls of the uterus, as I have more than once known to take place. In the majority of these cases I am in favour of the standing position, with the hind parts elevated; but of course one must be ruled by circumstances, as it is a thing for which we can lay down no hard and fast line of treatment. Next I will refer to the fore legs, presented with the head doubled back on the body. This is a tedious and very difficult one, which I have found often associated with deformity. In exceptional cases I have know presentations of this kind to be taken away as they are, one particularly in a mare last year. In cases where the head can be reached, pass a cord round the neck as near it as possible, then link a noose from that round the nose or into the mouth, draw gently with one hand until you can get a firm hold with the other round the nose, then work round into position. A case of this kind in a heifer I well remember, where a qualified

veterinary surgeon, after trying in vain for a long time to pull the calf away by the legs, tied a rope fast round the lower part of the neck. Considerable force was applied to this, and the animal pulled about by it, but with no better result. The end was then tied to a post, and the poor beast driven from it by force until the rope broke. The case was then considered hopeless, and the animal was ordered to be destroyed. By the simple means I have here described she was afterwards delivered of her calf, but as you might expect from such treatment, subsequently died. In many cases, however, particularly in mares where the fœtus is large, we can only reach as far as the breast; we must then draw gently on the legs, skin up to the shoulder, the one on the side the neck is doubled, and dissect it off; pull the other leg until the neck can be reached; then treat as before. I have often found a very great advantage in casting the patient on the opposite side to which the neck is bent, also in raising the fore parts until the cords are attached. Many practitioners advocate hooks being inserted into the eyes, jaw, or some other part, but I much prefer the cords as stated. One reason is (at least that is my experience) they are very liable to slip and injure some of the soft structures. Another and very difficult form is what is known as the breech presentation, that is where the hind legs are doubled under the body of the fœtus. I have known cases of this form, where it was found impossible to get the legs into position to pass a cord round the hind parts in front of the points of the ilium and be drawn away. In one severe case of this kind I had in a mare, one leg was dissected off, a hook inserted under the brim of the pelvis, and with the assistance of two or three men, was taken away in that form. The best and most satisfactory, where practicable, is to work a cord below the hocks, push back the body of the fœtus, and draw the legs into the passage. It occasionally happens we have the fore legs and head presented as in the natural position, and when weight is applied to the legs, we cannot pull it away. A careful examination should be made before much force is used, as most probably the hind legs are underneath the body in the passage. Should this be the case, the life of the fœtus must be sacrificed. Cut it in half as far back as possible, cord the hind legs, return the remainder of the body, and take away in that position. In some cases of twins we have legs or parts of each at the same time. These, as in the case of monstrosities, must be treated as they present themselves to us. In a difficult case of this kind in a cow a short time ago, I found great advantage by raising the hind parts by means of pulleys; in fact, I think I should not have taken the part away without.

One other, and to me very unsatisfactory, presentation is where nothing but the back is to be felt. In the few I have seen, I have found advantage, and generally an altered condition of the fœtus, by casting and turning the animal over. The most difficult case I remember occurred in my practice about ten years ago. The hind legs were laid across the entrance to the passage, with one fore leg over them, which could be reached as far as the knee. It being a valuable mare, and there being little or no prospect of my relieving her, a neighbouring M.R.C.V.S. of many years' practical experience, was called in at my suggestion. After several hours' work, we were only able to get a cord round one hock, but could not move the foal and had the mare destroyed. I have thought the case over many times since, and am of opinion that had it been possible to cut the gastrocnemii tendons, the hocks might have been got up in a flexed position.

During the spring of this year, which, from what I have learned from other members of the profession in my part of the country, was an exceptionally healthy one for foaling mares, I had the following cases, and, as in a great many which come under my care, had very unsatisfactory results:—About five in the morning of the 24th of April, I was called to a mare, the

property of a miller, living about four miles away, said to be foaling, and the foal wrong. I went as quickly as possible, and saw one fore-leg presented, which, I was told, had been some two hours before; on examination, I found the second leg crossed over the neck, and, pressing the head downwards. The mare had very slight pain. I had very little difficulty in raising the head, and, with the assistance of two men, extracted a live fœtus. The mare appeared in good spirits, ate a little mash, and had some gruel afterwards; but the second day was evidently much worse, and both she and the foal died on the third. About seven on Sunday night, the 4th of May, I was sent for to a valuable brood cart mare, the property of a large farmer, said to be suffering from colic, but was near foaling. She had been turned into the orchard during the afternoon, and showed slight pain at times, but nothing of a violent character, or which led them to know the cause. Ordinary colic medicine was administered, but, as the pain did not subside, I was sent for. On examination, I told the owner, I was afraid something was wrong with the foal, but as nothing was presented, I would give a little medicine, and wait to see if the pains increased. He told me the case was in my hands, to do what I considered best, but they had seen nothing put forward. After waiting about half-an-hour, and no improvement, I made an examination, and I found the foal on his back; the hind legs, instead of coming into the vagina, forced up to the spine at each pain. I may say that when I introduced my hand, the mare threw herself down and pained most violently, so much so, that before I could get the legs turned, the rectum was protruded some distance. I returned as much as possible, and took the foal away, but with great difficulty, owing to its size, and the surrounding parts being very much swollen. I administered chloral hydrate, and applied hot fomentations to the abdomen and quarters; but she never rallied, and died in a few hours. A fortnight ago, I had a presentation of this kind in a cow, which, I am pleased to say, is going on well. The third and last case was in a strong half-bred mare, at a farm about three miles from my place. When I drove into the yard, I met the foreman, his arms covered with blood, who told me that a few minutes before, the mare had foaled, and her inside was coming out. I found the presentation to have been the same as in the first case, a fore-leg doubled over the neck. The poor animal was in a most pitiable condition, and had, I was told, with one pain sent out the foal, and with it the uterus and intestines. The latter were trailing on the ground, and as she walked, or rather reeled round the box, was treading on and tearing them to pieces. Of course I was powerless in such a case, and in a few minutes she fell and died. On inquiry, I found she had had slight pains the day before, but showed no signs of foaling until about four in the morning, when I was sent for at once. I should like to have the opinion of the members present, whether or not it is advisable with mares near their time for foaling, to examine them at once, to see if anything is wrong, when the first symptoms of colic appear. I think myself that is the proper time. I should be pleased to have this subject followed up by the diseases most commonly met with about the time of parturition, and hope some members present will volunteer a paper for our next meeting. The two calves, if they may be so called, I have brought for your inspection, were taken by me from a cow, on the 19th July last. On the 18th a message was left at my place, to go over to Osgodby, a village about four miles off, to see a cow the owner thought had a dead calf. Being late home, and not thinking it a case of emergency, I went on the following morning. On my arrival, I found the cow laid comfortably in the stable, chewing her cud, and had it not been for about six inches of membrane hanging from the vagina, should not have thought anything was amiss. I was informed by the owner she was due to calve six weeks before, and at that time her milk came; but as she showed no sign of

calving, or even looked like being in calf, he thought she had a little downfall in her udder. On the morning of the 18th July she stood about by herself, and looked dull, but had no pain; she was shut up, and ate, and drank, as if nothing were the matter. On introducing my hand, I felt a hard substance, but could not make out what it was. With little trouble I took away the two calves together, wrapped in the membranes. The old cow was out again in a day or two, none the worse. During the time she has been in the present owner's possession, she has had twins six times, and three singles; with the previous one, twice twins and one single. Mr. Smith here concluded his paper, amidst applause.

The PRESIDENT: I think this is a subject we all know a good deal about, and I shall be glad to hear any remarks from any of you before I say a few words myself. I meant to have brought a pair of instruments I use for the purpose of taking away cases with the head back, as Mr. Smith has described. They are in the shape of a pair of scissors, and overlap.

Mr. GOOCH said he had several instruments of that description They were larger for a cow than a mare, and differed in length, some being nine inches long.

Capt. RUSSELL said he had listened with the greatest pleasure to the paper, and Mr. Smith deserved great credit for the way in which he had got it up. It was a subject they all knew a great deal about, for as country practitioners they were regularly called to cases of this description, not only in the mare, but in the sheep, pig, and even the dog. He found when called in to a mare or cow, if in much pain, that it was a good thing to administer one ounce of chloral hydrate, six drams to eight drams of water, while you were changing your clothes. It made the animal quieter, and you had not so much pain to contend with, and half your trouble would be removed. There would be more freedom of action and a much more pleasant job; and he had never known bad results ensue—in fact he was of opinion that they were better after it than before it. He expressed his opinion that, with protrusion of the rectum more than six or eight inches, the animal would be almost certain to die, even if it were put back. Mr. Smith did not mention among others the twist of the uterus. In a case he was called to, he could only get his hand in six or eight inches, and he came to the conclusion that the uterus was twisted. He tried several ways to undo it. He turned the animal over both ways several times, but could not get the twist undone, nor the calf away. The animal was destroyed, and he found a double twist of the uterus, which was completely over twice. As to examining an animal seized with colic pains shortly before the period was present, you would be perfectly justified in making an examination, at all events *per rectum*, as to the position of the foal. He should be very happy to accept the challenge of his friend, Mr. Smith, and would, if they wished it, prepare a paper on the ordinary diseases incidental to parturition. (Hear, hear.)

Mr. HARDY stated that he had two cases of protrusion of the rectum beyond six or eight inches last year, and one died in forty-eight hours. In the other, he found the mare had foaled, and there was protrusion of the rectum from ten to twelve inches. The man had tried to force it back at the time the mare was foaling, and had so far succeeded that when his assistant left there seemed nothing the matter with the mare. He was sent for again the next day, because there was no action of the bowels. The mare was then showing no abdominal pain, but the bowels did not act. She was in this way for eight days, and then she got all right. He might relate a case of a heifer he was called in to, showing symptoms of calving. She had been bulled about six months, and we could find more legs than we ought. There were two calves attached at the spine, two heads, eight legs, two tails, and the thoracic

and abdominal cavities were quite separate. The attachment began at the front of the shoulders, and terminated at the hips.

Capt. RUSSELL asked the President whether in his opinion these cases of deformity were more common in certain localities than others. He had been in practice thirteen years, and had had many cases of parturition, as they bred a good deal of stock in his district, but he had seen very few instances of deformity in the fœtus.

The PRESIDENT thought there was a great deal in the feeding of the animals. They would find more deformity in cart mares than in harness mares. In one case of parturition he attended there was only some six inches opening between the H's, and he was told he should have performed the Cæsarian operation, and in this case, a cow three parts meat, the best plan was to slaughter.

Capt. RUSSELL described the Cæsarian operation as performed by him. He was called in to see a cow, and found a portion of the ischium was projecting backwards and sticking up like a spike. The cow began calving some five weeks after, and he found this jagged piece of bone was preventing calf from getting away. Finding it impossible to get the calf away without killing both cow and calf, he made a long incision right through the flank, through the muscular tissues down to the uterus. The place was like a slaughter-house immediately, and he seemed to have severed several large vessels. He opened the uterus and took out the calf, and immediately cut the cow's throat. He had read of these operations being performed on the Continent with much success, but he could not understand how that was, if there was always such an enormous quantity of blood as in this case.

Mr. HARDY did not remember having much hæmorrhage when he took the calf away, though he killed the cow directly after.

Mr. GRESSWELL narrated a case of parturition in a mare when the forelegs were presented, which he successfully performed. The mare went on wonderfully well, but the foal was dead. He had had two or three similar cases.

Mr. HARDY asked if the meeting did not think they had more cases of this kind in shafting horses dragging manure carts and heavy loads where there were sudden strains.

Capt. RUSSELL asked if they were justified altogether in thinking these cases were the result of accident, or whether these deformities were not the result of the peculiar idiosyncrasy of the animal itself. They would see a mare in foal lie down and roll over and over, and yet how many cases of deformity did they find from this. He narrated an extraordinary case of facial deformity in a hunter, through its head having been turned in the uterus and laid on the spine of the scapula.

The PRESIDENT said this year they had had in his district more breech presentations than he had ever had in his life before.

Mr. RUNCIMAN asked if it was not the President's experience that breech presentations were generally dead.

The PRESIDENT: No, not as they start; but they die before we get them away.

Mr. RUNCIMAN said in many cases they found a decomposed foal.

The PRESIDENT said the reason they were dead was because they were given more time. A mare with a breech presentation did not strain so much as at other times.

The SECRETARY said he had a case in a heifer of twins, a month ago, with a breech presentation. He went into the house after taking one away, the other being a breech presentation, and it had been dead three or four days.

Capt. RUSSELL asked the Secretary if he thought that was by a former impregnation.

The SECRETARY answered, No; she had only been to the bull once.

Mr. SMITH asked whether the formation of the country had anything to do with these cases, and cited his experience, which was that in fields, hilly and full of holes, such were often to be met with.

Capt. Russell and the President related further experiences, and Mr. Gooch stated he was in the habit of severing the gastrocnemii muscles in certain cases. Captain Russell further said that he always gave a dose of physic after difficult cases of parturition.

Mr. GRESSWELL: I don't agree to that.

Capt. RUSSELL: If you give them four or five drams of aloes, you'll find they will go on all right and do better.

Mr. SMITH said it acted as a febrifuge.

After further discussion, the PRESIDENT asked Mr. Smith if he had anything to say in reply.

Mr. SMITH: Nothing; except to thank you for the kind manner in which you have discussed this question. I am sure I have learnt a little and hope we all have.

Capt. RUSSELL proposed, and Mr. GRESSWELL seconded, a vote of thanks to Mr. Smith for his paper. Carried *nem. con.* It was decided, should Professor Wally be able to read a paper, that the next meeting should be at Grantham, and if not, either at Louth or Market Rasen, the President and Secretary to make the final arrangements. F. SPENCER, *Hon. Sec.*

SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

A MEETING of the above Association was held at the "Rose and Crown," Tunbridge, the 29th Sept. Mr. F. W. WRAGG, of London, presided, and there were also present:—Messrs. J. B. Martin (Rochester), E. A. Hollingham (Redhill), Hon. Sec.; W. Covenay (Headcorn), P. Gregory (Tunbridge), W. Cawthron (Hadlow), &c. The attendance was small.

The minutes of the last meeting, held at Windsor, having been confirmed, the Hon. Sec. reported that he had received letters from Messrs. Holman, Stock, Welsby, Edgar, Rock, H. Hogben, and F. C. Hogben, regretting their inability to attend, in consequence of pressure of business. He next read a letter stating that Dr. Fleming had been taken suddenly ill whilst on a tour of inspection in Ireland, but that he was progressing very favourably.

The HON. SECRETARY said that after the meeting at Windsor he was directed by the Association to write to Mr. S. L. Simpson, acknowledging their appreciation of his kindness towards them on that occasion, and thanking him for the manner in which he entertained them there. He now read Mr. Simpson's reply, in which Mr. Simpson said he was only too glad to have the opportunity of being of service to the Association, and it would always be a source of gratification to him to see the members at any time they thought proper to make Windsor a place of meeting.

On the Breeding of Horses.

The next matter before the meeting was the above, on which Mr. Martin had very kindly offered to read a paper. The PRESIDENT, however, said he thought it would be almost a pity that so good a subject should be gone into with so few members present, in which feeling the meeting generally concurred. Mr. Martin, however, without reading his paper, quoted one or two extracts from it, and offered some valuable observations thereupon, as will be gathered hereafter.

Mr. MARTIN, in the course of his remarks, called attention to the Rochester Cart-Horse Stallion Society, for improving the breed of cart-horses. The shares, he said, were readily and cordially taken up and they paid five per cent. every year, and although that was not much, the real object for which the Society was established was to keep a good, serviceable pedigree stallion in their district, and no doubt the farmers would be able to supply the London market with really first-class animals. The principle was one that ought to impress itself on the farmers in every district. If farmers were, as was alleged, not intelligent, they showed a greater desire and more energy to advance their own interests and position than veterinary surgeons. The latter ought to be able to urge upon the farmers the importance of having a first-class stallion in their district, and to show them the class of animal they required. The interests of the two classes were identical ; if farmers were doing badly, the veterinary surgeons were doing badly also. If it did not now really pay to grow wheat, the breeding of cart-horses for the London market, where they could realise £80 each, would be a great source of profit to farmers in places where there were meadow lands; and, therefore, he considered the veterinary profession might be of much use to the agriculturists in this matter. What impressed this question upon him in the first instance in the Rochester district was that farmers were using all sorts of mares, without exercising the least discrimination in the selection of them, or in the selection of the stallion either. A mare, however unsound, was put to any little weedy cart-horse that happened to be travelling in the district at a fee of about a sovereign, and the result was that at about five years old the colt was worth about £35 ; whereas, with ordinary intelligence in the selection of mares and the sire, they could raise good cart colts which could be worked up to six or seven years old, and then supplied to the London market at, as he said, about £80, which would be a remunerative price. Veterinary surgeons should be in a position to give farmers in the district proper information, and that was the reason he wrote this paper "On the Breeding of Horses." His opinion was that in the south veterinary surgeons had partaken of the apathy of the farmers, and that they would rather sit quietly at home and smoke their pipes than pay a little more attention to the advancement of veterinary science. That was what he really thought about them. There was no encouragement for anyone to read a paper ; the members of the profession would not attend. Veterinary surgeons should write papers for farmers' clubs, and thus advance their reputation, and raise themselves in the estimation of the public, and show that they were useful citizens. Mr. Martin concluded by saying that if they could induce farmers to form a company, and keep a first-class stallion in the district, they would be conferring a great benefit.

The PRESIDENT said he thought with Mr. Martin that these practical papers do a great deal of good.

Mr. MARTIN : You raise the profession on an equality with the farmers.

It was generally agreed by the meeting that the views expressed by Mr. Martin were a move in the right direction, the PRESIDENT at the same time remarking that the thing was to get farmers to breed from young mares as well as carefully selected ones.

Mr. GREGORY asked Mr. Martin if he showed in his paper how to tell for certain whether a mare is in foal or not.

Mr. MARTIN : I don't tell you that. Can you tell ? I bought a mare last spring that was going to foal, but she has not foaled yet. (Laughter.)

Mr. GREGORY : We had so many mares in the district that showed all the symptoms of foaling.

Mr. MARTIN, with respect to the Rochester Society, said they had got £300 or £400 in the bank, and they thought about extending the district with

the present sire horse, and buying a Clydesdale to change the breed. He pointed out that it was not a matter altogether of what they paid, it was the principle of improving the breed in the district.

The PRESIDENT: It is more than five per cent., if you take into consideration the return they would get for a better breed of cart-horses.

Mr. MARTIN: My object was to get the farmers to take an interest in their own horses.

The PRESIDENT said no doubt better cart-horses would be obtained now, through the efforts of the English Cart-Horse Society.

Mr. MARTIN: But you want them in all districts. I know for a fact there are a number of horses travelling in our district, and also in other districts, that are roarers, side-boned, and broken-winded, and the public don't know it; if there is a horse travelling there, and the fee for service is only a guinea, they would rather put a mare to that horse with no pedigree, and risk its unsoundness, than pay two guineas for a sound pedigree stallion that would cost about 400 guineas. If you could form a company in different districts, and get the farmers to take a share in it, they would feel an interest in their own horses. How this horse of ours at Rochester pays is this: To every farmer he goes to we know exactly how many mares he serves, and while there the horse is kept by the farmer, and the man in charge of the stallion, too. We send round a card stating where the horse will be on certain days. We do not allow him to serve strangers' mares under a subscription fee of three guineas, those holding shares in the society paying two guineas. If you give 350 guineas for a horse you must charge for him, and if he serves 100 mares at two guineas each, it pays. Then one of the farmers works the horse all the winter and we discharge the man, and when the horse comes on for service again we take the man on, and the expenses go on.

The PRESIDENT: The horse really costs you nothing in the winter?

Mr. MARTIN: No, he goes and earns his living.

Mr. GREGORY: It is the right idea, and a move in the right direction; there is no doubt about that.

Mr. MARTIN remarked that without pedigree, soundness, and size, good stock could not be ensured.

Mr. GREGORY: You want the farmers to breed from good mares as well?

Mr. HOLLINGHAM: The fact of it is they seem to think that after a mare is fit for nothing else, she is fit to breed from.

Mr. GREGORY: They say we are not often right, but they are beginning to see that now. One man I know always used to breed from old mares, but he does not do so now. He breeds from three to six-year-olds, and then puts them into hard timber work, and they go and stand it then.

Mr. MARTIN said it was the province of veterinary surgeons to advise them against breeding from old mares.

Mr. HOLLINGHAM: And they thank you very often for the information you give.

Mr. MARTIN: But they must know it is right. This is a wealthy district with hops and fruit; but corn is at a low price, and wherever corn is grown it must pay to breed cart-horses.

Mr. GREGORY remarked that hops do not always pay.

Mr. HOLLINGHAM: You can generally make them, if you have got money enough to spend on them.

Mr. MARTIN: If you can average £80 apiece for horses at five years old, breeding must pay. Lots of good dray-horses fetch 100 guineas in London.

The discussion then ended, an earnest hope being expressed that Mr. Martin would read his paper another time, and that he might have as large an attendance of members to hear it as the interesting subject deserves.

Fat Stock.

Mr. GREGORY incidentally remarked that he thought a great mistake was made in sending stock to shows so fat; and yet it was no use sending animals in a useful breeding condition—they were not looked at.

Mr. MARTIN: That is a little want of discretion on the part of the judges. A fat animal is taking to the eye.

The Next Meeting.

Mr. MARTIN stated that he wrote to Mr. Edgar, asking him if he would favour them with the paper for the next meeting in March, and he had kindly promised to read one on "*Bovis Mammitis Garget.*"

On the motion of Mr. Martin, seconded by Mr. Cawthron, it was resolved that the next meeting of the Association be held in London, and that the Central Veterinary Medical Association be invited to meet them.

The business concluded with a cordial vote of thanks to the President, who, in acknowledging the compliment, said he only wished he had had a larger meeting to preside over.

The members, joined by a number of friends from Rochester, afterwards dined together at the hotel, a first-class repast being provided. The chair was taken by Mr. Wragg, who, in response to the toast of his health, proposed by Mr. Stace, returned thanks for the kind way in which he had been referred to as the head of that day's proceedings.

Mr. HOLLINGHAM gave "The Visitors," and said although on the present occasion the members of the Association were outnumbered by two, or three or four to one, he hoped their friends would not go away with the idea that that was their usual style of doing things. As it was, there was a fairly good muster between them; and if those gentlemen present did the Association the honour and pleasure of attending another of its meetings, he trusted they would not be in the majority. He begged to couple with the toast the name of Mr. Ballard, who suitably responded.

The PRESIDENT, in giving the next toast, said he had never been to a meeting of this Association without finding his old friend, Mr. Martin, there. He could assure them that Mr. Martin was a good man and true, both inside and outside of the profession, and the Society's present efficient condition, which enabled it both to hold its own with the other and larger and older associations, was mainly due to his indefatigable exertions. He, therefore, had great pleasure in proposing the health of Mr. Martin.

Mr. MARTIN, in reply, said he had the welfare of the profession at heart, and endeavoured, as far as he possibly could, to advance its interests, and to infuse a similar spirit in all the other members, to induce them to exercise their energy and influence in the direction of making themselves really scientific men, and taking those gigantic strides such as Dr. Fleming and others had done. He specially mentioned Dr. Fleming, who, through his energy, perseverance and hard work, combined with keen perception—all characteristic of Scotchmen—had conferred a great benefit on the profession. Scotchmen always tried to rise to the top of the tree, and Dr. Fleming was an eminent example of that; he was always seeking out, in conversation or otherwise, anything of a practical nature, and was one of the best-read men in the profession he (Mr. Martin) ever knew. Comparing the northern men with the southerners, the latter were not in it. He again commented upon the apathy displayed by veterinary surgeons in their own profession and interests; and remarking upon the fact that it took one several hours to write a paper, and that then, though close at home, members did not take the trouble to attend, he said it was a disgrace. In other counties where the Association had met, whether in Sussex or Berkshire,

or in London, they always had excellent meetings ; the Londoners rallied round them in a very hearty manner. With regard to the President, Mr. Wragg always honoured them with his presence, and likewise showed his interest in the profession by doing anything he could in its behalf.

The company then separated.

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of this Association was held at the County Hotel, Newcastle-on-Tyne, on August 29th. In the absence of the President, the chair was occupied by D. Dudgeon, Esq. (Sunderland).

Present:—Messrs. Grieve, Blaydon ; Nisbet, Fence Houses; Mulvey, Bishop Auckland ; Hy. Hunter, A. Hunter, Gresty ; Wm. Hunter, and the Secretary, Newcastle-on-Tyne.

Messrs. Drake and Winteringham were present as visitors.

The minutes of the previous meeting having been read and confirmed, Mr. Drake, M.R.C.V.S., Stanhope, was proposed as a member of the Association.

Mr. H. HUNTER narrated a case of Epilepsy in a horse that was recently under his treatment. The animal's temperature was 106°, pulse 85. The mouth was drawn on one side, and the animal usually had a fit when startled. The treatment consisted of oil and chloral hydrate in the first instance, but afterwards more benefit was derived from Liq. Ammon. Acet. and Ether Nit. The animal subsequently recovered and did well.

Messrs. DUDGEON and MULVEY stated that they had successfully treated similar cases.

Mr. NISBET mentioned that he had under treatment a young pony that invariably had fits when startled. As the animal's age increased the fits became more violent, and the pony was destroyed, the case being considered hopeless.

Mr. A. HUNTER then read a most exhaustive and practical paper on "Diseases of and Accidents to the Horse's Foot." An animated and interesting discussion followed, in which all present took part.

The CHAIRMAN proposed, and it was unanimously carried, that the further discussion on Mr. Hunter's paper be adjourned to next meeting, when Mr. Nisbet will reopen it with some remarks on Laminitis.

Votes of thanks to Mr. Hunter for his paper, and to the Chairman for presiding, brought the meeting to a close.

WILLIAM W. SMART, *Hon. Sec.*

THE MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

A MEETING of members of this Association took place at the Ram Hotel, Gloucester, on September 26th. The President, Mr. H. M. Stanley, Birmingham, occupied the chair.

There were also present, Messrs. H. Olver, Tamworth ; T. Greaves, Manchester ; J. Malcome, Birmingham ; James S. Barling, Hereford ; W. C. Barling, Newnham ; F. W. Barling, Ross ; E. Meek, Walsall ; T. W. Wragg, London ; S. G. Merrick, Northampton ; H. D. Pritchard, Wolverhampton ; E. Beddard, Wolverhampton ; and H. J. Cartwright, Wolverhampton.

The SECRETARY read letters of apology for non-attendance from the following members: Messrs. F. Blakeway, Stourbridge ; Prof. S. Walley, Edinburgh ; G. Rossell, Sandiacre ; L. C. Tipper, Balsall Heath ; J. G. Cross, Shrewsbury ; J. E. Pitt, Birmingham ; H. Blunt, Lutterworth ; H. R. Perrins,

Worcester; J. Wiggins, Market Harborough; W. Carless, Stafford; and O. J. Hills, Leamington.

The minutes of the last meeting were read and confirmed.

Meeting of National Association in Birmingham.

The PRESIDENT reminded the meeting that the National Veterinary Medical Association proposed holding their next annual meeting in Birmingham, and he trusted members of the Midland Counties Association would endeavour to make the event a success. He invited them to become members of the National Association. (The annual subscription is half-a-guinea.)

Mr. OLVER, at the invitation of the Chairman, referred to the meeting of the National Association, which he said had done him the honour of electing him President. Vice-Presidents had been proposed and a provisional Committee selected. He hoped the National Society at its next meeting would be well supported, as he believed the institution existed for the benefit of the profession. They derived intellectual as well as social benefit from attending such gatherings.

The next Place of Meeting.

Mr. MEEK proposed, and Mr. PRITCHARD seconded, that the next meeting of the Midland Counties Veterinary Association should take place at Walsall.

The CHAIRMAN read a letter from Mr. Blakeway suggesting that the next meeting should be held at Nottingham.

It was unanimously decided to adopt the former proposition.

The CHAIRMAN announced that Professor Walley, Edinburgh, had promised to read a paper at the next meeting.

New Members.

The following gentlemen were proposed as members of the Association: Mr. BEDDARD proposed and Mr. MEEK seconded Mr. Banbridge, of Wellingborough; Mr. OLVER proposed and Mr. MALCOME seconded Mr. Moir, of Cardiff; Mr. J. S. BARLING proposed and Mr. T. W. BARLING seconded Mr. S. Pritchard, of Hereford; Mr. BEDDARD proposed and Mr. MERRICK seconded Mr. Aris, of Wellingborough.

The proposals were agreed to.

Mr. T. GREAVES, Manchester, then read the following paper:—

Glanders in the Horse; its Nature and Prevention.

Glanders is an ancient phraseology. It ever has been, and still is looked upon as the most malignant, terrible, and dangerous disease the horse is subject to. Unlike almost every other disease, if the glander microbe gets imported, or imbibed into the system by any means whatever, its effects in nearly every case are mortal. Influenza, Pneumonia, Enteritis, Hepatitis, and a host of other diseases may attack the system even in the most virulent form and subside again, leaving not a trace behind. But if the real disease-producing element or poison of Glanders, or Farcy, enters the system it is never eradicated; in some constitutions it may wither and not fructify. There is an irregularity and uncertainty in the period of incubation, and some obscurity about it; the patient may rally apparently for a time, when enjoying genial and favourable conditions; the horse may live an indefinite period in an apparently healthy state and the disease be unsuspected, but sooner or later the small living micro-organisms, which really constitute the disease and which are all

the time lying latent, will, when subjected to extremes of heat and cold. suddenly become resuscitated and manifest their full vitality. An active ferment is set up, the poison-germs are cultivated in the whole system, assuming a deadly form, creating a loathsome, virulent, and putrefying condition of every tissue in the body, and if not destroyed, in nearly every case death mercifully puts an end to his sufferings.

I have said that a patient may rally for a time when enjoying favourable conditions; he may live an indefinite period in an apparently healthy state. I will illustrate what I mean by relating two or three cases. One, a chestnut cart-mare from out of a stable that never had a case of Glanders in it before; she was in middle age, in regular work, and in fair working condition. The disease began by slow degrees, she fell off her eating and condition; in two or three weeks we were requested to examine her; there appeared some trifling constitutional derangement, but the symptoms indicated no particular ailment; she had some simple alterative medicine, then a course of tonic medicine, teeth were rasped and various changes of food, and kept at easy work; still no improvement, but, on the contrary, became poorer and poorer, weaker and weaker; she had a slight nasal discharge and enlarged glands, great depression of spirits, eyes sunken, and gummy discharge from them—suspicious indications; pulse, breathing, and temperature nearly normal; she could scarcely get along and was obliged to give up work; up to this time there was only a slight discharge from the nostrils or tumefied glands. The Schneiderian membrane was perfectly free from ulcers and of a pallid hue, but she had no strength of lungs, the cough was full and hollow. She had now been ailing about six or eight weeks; she had been kept isolated all the time. At this stage it suddenly assumed a very aggravated form, ulcers in her nostrils, farcy buds, and corded absorbents in various parts of her body made their appearance, the tumefied glands increased in size. I gave an emphatic opinion that the case was hopeless, and advised that she be destroyed. The owner begged that she might be sent into the country to a paddock where she could be taken up at nights; it being summer-time this was done, and she was to take her chance, when, lo and behold, she began to recover, and in two months there was no sign of Glanders or Farcy, nasal discharge having entirely ceased and glands gone completely away. The mare had grown and thickened and bellied, and was in excellent spirits. She was brought back and kept to herself, and put to easy work. She kept on for several weeks, when she began to fall away again, and every symptom returned; she was again sent out to the same place in the country. She did not rally this time; in a few weeks she sank and died.

The second case was a young, well-bred, valuable horse. He had a discharge from his nostrils and tumefied glands—glands as large as walnuts—for a long time; he had all kinds of medicine, blisters to his throat and face repeatedly, trephined over and over again, teeth punched out, etc., with little or no improvement; the Schneiderian membrane for two years perfectly clear of ulcers; always eating well, mostly in good and fine condition, in excellent spirits; the glands had subsided to the size of peas, could work well, his lungs could endure exertion, and he could cough a good, strong, shrill cough. These two last conditions *I always look upon as a crucial test in critical or doubtful cases*, next to inoculation as a matter of certainty. If a horse has miliary tubercles in his lungs he cannot cough a shrill cough, or endure exertion. By this time he was turned out to grass; it happened to be a cold, wet season; he was starved and perished. He came home very much reduced in his condition, he gradually sank, Glanders and Farcy showed themselves in a virulent form, and he died. Had he not been subjected to this exposure he might have lived for months or years, and disease latent in him all the time.

I have seen cases in which scores of Farcy buds existed, and corded

absorbents, and nostrils covered with true chancre ulcers, and tumefied glands, and in whose lungs there were not the slightest appearance of miliary tubercles. You will see by this that even virulent Glanders and Farcy may exist in some cases, and yet the vital organs be not implicated; in such cases the animals may live for years, although the disease is in them.

My contention is that had these horses which I have referred to continued where they improved so remarkably, where the climate, stables, and conditions were so genial to them, the seeds of disease would have lain quiescent, dormant, in them for months or years, and the disease escape detection or identification; but that the seeds of the disease could become resuscitated and the active ferment set up again at any time if they were placed in altered conditions of extreme heat or cold favourable to the cultivation or reviving of the Glanders germs, which still existed and lurking within them, for it must be remembered these Glanders germs possess a strong vitality. I care not whether those altered conditions are in the hold of a vessel, in a new stable, or in a brigade encamped in the open air, Glanders in its most virulent form would have been developed or resuscitated in those horses, and they would contaminate the air of a whole stable, or ship's hold, in a few hours to such a degree that every horse susceptible to the disease, breathing the same air, would become affected, and an outbreak of Glanders in its most malignant form be the inevitable result. An original germ can, in an incredibly short space of time, give rise to successive generations of germs. A germ is nothing more than a particle of living matter, and every single spore of the millions contained in diseased blood is competent to produce malignant disease in a susceptible subject.

Yea, gentlemen, the germs or microbes of Glanders can lay latent in other conditions, in other habitats than in the animal organisms. Percivall, in his "Hippopathology," gives an example at Lisbon, "where Glanders broke out amongst the troop horses with such virulence that the stables were obliged to be shut up, *locked up for thirty years*, but from the circumstances of another war they were again opened, and then, from the infection having remained in the stables all the time, the horses that were put into them became immediately glandered, the active principle was retained, we do not know for how long before, nor for how long since." Here arises one of the most interesting questions that can occupy the mind of the physiologist; it is a problem worthy of our greatest intellects to try to solve, viz., were these micro-organisms which produced Glanders in the latter horses the same micro-organisms that produced the disease thirty years before, or had there been a succession of generations of these micro-organisms during the whole of this period of thirty years? We see the germs sustained vitality throughout the vicissitudes of heat and cold during this long period. Our pathological knowledge of Glanders is by no means complete; we want more clear knowledge, it has become of urgent practical importance. It is not my intention to give you the symptoms, or any method by treatment, since I believe such would only be a waste of your time. I shall, however, ask you to give me your earnest attention for a short time while I discuss the question of the cause of Glanders and Farcy, and then we will consider the best means we possess of preventing it, and if, unfortunately, it has gained access in a stable, the best means of confining its ravages.

I believe the cause of Glanders and Farcy to be in every instance referable to contagion, that there must be a specific Glander poison or Glander germ to produce Glanders, that this specific poison or germ can only produce this disease; it can produce no other disease, and no other poison or germ can produce Glanders, only the living can give rise to the living. I should as soon expect to see a blade of wheat or oat spring out of the earth without the grain of wheat or oat having been placed there. Would you not stand

amazed, and doubt the evidence of your own senses, if you saw a whole field of wheat, oats, or potatoes spring up out of the earth without any seed having been planted, or would you be less amazed to see children and all kinds of animals born spontaneously without parents? The analogy holds good in every particular.

Professor Gamgee says, "But certain it is that the laws of procreation are as clearly obeyed in the propagation of a virus, of an animal poison, of that which kills a mare or an ox as in the reproduction of animals themselves." Can you expect an oak sapling to spring up out of the ground without an acorn at the root of it? Perhaps you may say, Yes, I can; and you may think that you have me on this point; you may say, I can do without the acorn to produce the oak sapling. I can plant a slip of oak in favourable soil, and it will take root and grow, or I can graft a slip of one tree into another and it will grow, and in like manner I can do without germ or seed. I would ask, Do you think this proves your case, that no germ is required? is it not by your own showing absolutely necessary that you set the oak slip to produce the oak tree, or graft the rose slip to produce the rose tree? In like manner it is absolutely necessary we must have implanted in the system the Glanders germ to produce Glanders; the quantity may have been very minute and imbibed months before. Do you think it is crushing argument against my theory, that if it is contagious every horse in the stable shall become alike affected? is it not an admitted fact that the difference in degree of susceptibility in animals is as wide as the Poles? have we not a host of evidence substantiating its authority? I presume no one will have the temerity to argue, that because every horse in a stable happens not to catch the disease where Glanders is in the stable, that therefore Glanders is not contagious. Such would be fallacious reasoning indeed; germs imbibed into the system of non-susceptible constitutions may wither and die, like seeds sown in unfavourable soil; such seed withers and dies, it cannot fructify.

Mr. Hunting says, that "Of every hundred cases of Glanders ninety-nine are unmistakably due to contagion, and probably the hundredth is traceable to the same cause, if we only could follow the hidden mode of communication." Percivall, in his "Hippopathology," shows this different degree of susceptibility in different individuals very clearly when he says, "Six healthy men shall have intercourse with the same diseased individual woman, and it shall happen that but one or two of the men shall take the venereal disease, the remaining four or five shall escape," does this prove that it is not contagious? Again, because Glanders breaks out occasionally in a foul, ill-ventilated stable, is that a proof that it is the foul stable and not contagion from which it has emanated? I am certain it is not; it depends upon other conditions. I can tell you that I have known many foul stables where the miasma and strong smells were intolerable and had been so for years, but in them Glanders had fortunately never been known, but in which Influenza, chest disease, etc., rode rampant; and in other stables where the ventilation and drainage could not be found fault with, they being sweet and healthy, there Glanders had had a transient existence; are we then to condemn the sweet, well-ventilated stable, and laud the foul stable? No such thing; depend upon it if Glanders broke out in both these stables, from some infected animal entering them, the horses in the former stable might live, but in the latter they would die like ro ten sheep. I have known Diabetes to reduce a horse to attenuation and death, without Glanders or Farcy supervening, and in other stables affected with Glanders poison they have all died of Farcy following Diabetes.

I believe that germs, Bacteria, Bacilli, or microbes of any species, in certain conditions, may be so cultivated that they shall become more powerful,

malignant, and virulent, or under other conditions these same germs, Bacteria, Bacilli, or microbes may be so weakened that they can scarcely produce any effect whatsoever; but I do not believe that they can be changed in their nature—that is, their species or individuality changed. I am not quite sure whether the Glanders germ may not be capable of being transmitted or be hereditary. I have a full and confident belief in the advancement of science, and that microscopes and other means will in time advance to that state of perfection that the bacillous germ or microbe of Glanders, and that of Smallpox, and that of Cattle Plague, and all other infectious diseases, will be detected, and known with a distinctness, an individuality, and certainty, and that it will be found that they are as different as is the spider and the common house-fly.

We will now consider the best means at our disposal to prevent the disease. The consideration of the first and greatest importance is, the most careful avoidance of coming near any diseased animal, both indoors and out of doors, and going into an infected stable, or allowing other horses coming into your stables; next in point of importance is the character of the atmosphere in the stable in which your horses live, see that it is free from pollution or miasma from foul drains; have surface drainage, if possible; have your ventilation on correct principles, have a current of air right through the stable, if possible—not too much to starve your horses, for no horses will thrive or feel comfortable in a cold stable; nor let it be too warm or confined. Sanitary science is all important; sprinkle quicklime all over the floor twice a week; keep your stables of a nice, comfortable, genial temperature; good sweet wholesome food, good water, not over-worked, great care taken of them, both in the stable and while out in their work. All these points vigilantly, diligently, and constantly attended to, will ensure an immunity from Glanders, the contagia or micro-organisms having been effectually destroyed or so weakened as to be quite innocuous; but supposing the disease has indeed gained an entrance into your stables—suppose one of the horses which was of susceptible nature had inadvertently been put in a stable which was infected with Glanders poison, he imbibes it, and in a very short time he becomes ill, and it shows itself in a malignant form; or suppose the observance of the rules had been neglected, and some other horse has been allowed to stand in your stable for a few hours or a few nights, and such horse was at the time suffering from the disease, or you may have purchased a new horse, which was suffering from the disease in some insidious form which you entirely unsuspected—in either case the glander germ or microbe has been let loose in that stable, and if such animal continues in the stable for a few days or nights, depend upon it, it is a centre of infection; the real disease-producing element radiates. I believe it differs vastly in its degree of virulency and deadly effect; every horse in the stable imbibes more or less of it. It is natural to infer that those horses standing nearest to the infected horse would be likely to imbibe the largest quantity; but these horses may not be the most susceptible, or scarcely susceptible at all; others at a distance in the same stable, but more susceptible, will become affected first; perhaps it may have existed a week or two before it is detected, and has by this time permeated all the air in the stable and got a good hold; it will require energetic and decisive steps to be taken if the hideous monster is to be ejected. Now what is the best course to pursue? First, have the affected horse or horses removed at once; if they are decided cases they should be destroyed, if they are not bad cases they can be removed to a distance and kept completely isolated. Secondly, have the stalls they occupied thoroughly cleansed; this consists in having the manger, rack, boskins, and wall well washed with boiling water, McDougall's soap and brush; put a white-hot fire in a movable grate in these stalls an hour at a time, twice a day for a week. Thirdly, fumigate

every stall in the stable with carbolic acid fumes every day for a week, and then twice a week for a month. Fourthly, let every horse in the stable be carefully and strictly examined all over for any symptoms of Glanders or Farcy; this examination should be done twice a week for a month, by the veterinary surgeon himself; extra care should be taken of every horse; when brought in at night they should be made warm and comfortable before being left for the night; see that they have none but sweet wholesome hay, and corn, and water. By a strict observance of these rules, you may in nearly every case effectually stop its further progress, and get rid of this frightful disease, and I fully believe every infected stable may be made clean by these means.

In conclusion, I wish to make a few remarks on the law as it affects Glanders. The law says a man must give notice to the police of his having Glanders in his stud; the penalty for not doing it is £20 or three months' imprisonment. He can agree to have such slaughtered; if he refuses, the authorities can give him notice and have the horse destroyed. If he moves a glanderous animal into the public street he is liable to a fine. The local authority can prevent the movement of all horses out of a stable in which a glandered horse has been standing; this would be in many cases an immense inconvenience and a great hardship; in fact, it would be simply ruin to the owner; he may sell any other horse out of the stable not apparently diseased, although it may be only passing through the stages of incubation. Now to detect and destroy each centre of contagion, and thus prevent its spread, we should have a strict law compelling all slaughterhouse owners or keepers of kennels to keep a register, and to make a return of all glandered horses coming into their hands, and state candidly and honestly where they come from. This they do not do; they only return such as are sent to them by the inspector, and they argue that the other cases are unrecognised by them. We cannot force men to see, but we might prevent them from killing any horse with a discharge from his nose, or with suspicious sores on his body or limbs, until examined by the inspector or veterinary surgeon. By these means, and by a constant and diligent supervision of slaughterhouses, every glandered stable in the kingdom would become known to the authorities, and all such stables compelled by law to have surface drainage and the process of cleansing and ventilation I have indicated. Glanders and Farcy in England, instead of being on the increase, as it is at the present time, would become a thing of the past.

Gentlemen, I have done. Let us not take an enervating or a melancholy view of our noble profession; let us not see time passing away without being put to its full value. Surely in a matter of this important kind we should endeavour to do something, that we may say that we have lived, that we have not lived in vain, that we may leave some impress of ourselves on the sands of time. My earnest advice to each and all is, "Go, labour on."

The Discussion.

The CHAIRMAN having remarked that the subject introduced by Mr. Greaves required a great deal of consideration, he invited discussion.

Mr. F. L. BARLING mentioned a curious case which had come under his personal observation. A gentleman owned five or six horses, which he had as well kept as any in England. His stables he had not only had cleaned but partially rebuilt; last year the legs of one of them, a fine chestnut, were found to be very much swollen; the animal was miserably dejected. It had a peculiar laboured breathing, with a slight symptom of cough; some indications of Farcy were visible. Four days afterwards the legs had burst open in a hundred places. A more negligent case of Glanders he never saw, and the animal had to be shot. He would like to ask Mr. Greaves how he would

account for the outbreak. More complete or better ventilated stables could not be.

Mr. GREAVES said he had known similar cases, and he believed that in every instance, if careful investigation were made, it would be found that the disease was the result of contagion. Probably, if a horse had not been in actual contact with a diseased animal, it had been in a stable where a diseased animal had been stabled. Under these circumstances only the most susceptible horses became affected. Probably three or four others would not do so, but every case was the result of glanderous matter being imbibed.

Mr. OLVER remembered a case in which two colts were affected, one with Glanders and the other with Farcy. As they had never been off a farm or in a stable, or even crossed the public road, it was a case which suggested spontaneous origin. Referring to disinfection of buildings, Mr. Olver said he did not believe in fumigation or the use of limewash. He had a particularly strong objection to whitewash, because he believed it only covered up instead of destroying the germs of disease. (Hear, hear.) He remembered an outbreak of Pleuro-pneumonia in his own neighbourhood. A number of sheds were disinfected in the ordinary way with carbolic acid powder and the place was whitewashed. Five years afterwards the disease broke out again, because, as he believed, the whitewash tumbled off the walls. Steam was the best disinfectant.

Mr. GREAVES agreed with Mr. Olver that the whitewashing was useless; unless the germs of the disease were properly destroyed they were certain to develop themselves even after a long interval. Alluding again to the case mentioned by Mr. Barling, he admitted it was difficult in the face of such an instance to believe that Glanders was incapable of spontaneous origin. But the Cattle Plague had been spread in hundreds of cases owing to the germs of the disease having been carried by men. Birds and dogs would also carry them. Professor Simonds had said that the excreta of a diseased animal taken on the end of a lancet from a stable at one end of the land to a stable at the other would be sufficient to produce the disease. They evidently had much to learn on the subject. But he believed that the advance of science would confirm his belief that the disease could only be produced by contagion.

Mr. WRAGG spoke of the importance of the subject under discussion, and said Mr. Greaves was not a gentleman who objected to those who did not agree with him. It had not been his experience to see horses with tubercles in their lungs which were not able to undergo exertion. He had seen several horses slaughtered when suffering from Glanders, and in the majority of instances they had been worked long after tubercles had formed. The question for consideration was how long the tubercles had formed after the glanderous poison had assumed an active state. His belief was that it took some weeks. He bowed to Mr. Greaves' superior experience when he said that Glanders might be produced if a horse breathed the air in an apartment with an affected animal, and the emanations from the skin were likely to affect another animal. Whilst quite agreeing that Glanders must be produced by contagion, he was scarcely prepared to go so far as Mr. Greaves; if he were, he should not like to go near many glandered horses. The case mentioned by Mr. Barling seemed, perhaps, to rather upset the contagion theory, but it must be remembered that the contagion could be conveyed in numerous ways. He was inclined to believe that the lungs formed the seat of disease in Glanders and Farcy. As to preventive measures, the principal thing was to examine the stud as carefully and as frequently as possible. When he had a case of Glanders, he carefully examined the stud throughout once a week. In disinfecting, limewash was useless, unless mixed with carbolic acid or chloride of lime.

(*To be continued*)

PROCEEDINGS OF THE SECOND GENERAL MEETING OF THE NATIONAL VETERINARY ASSOCIATION,

HELD AT THE VICTORIA UNIVERSITY (OWEN'S COLLEGE), OXFORD STREET, MANCHESTER,

ON WEDNESDAY AND THURSDAY, JULY 30TH AND 31ST, 1884.

The President (THOMAS GREAVES, ESQ., F.R.C.V.S.) occupied the chair.

The members present were :—Messrs. J. W. Anderton, Skipton-in-Craven; W. Awde, Stockton-on-Tees; J. M. Axe, Doncaster; Professor J. W. Axe, London; E. W. Baker, Liverpool; C. T. Barnes, Cheadle; J. Bell, Carlisle; H. Blunt, Lutterworth; A. W. Briggs, Halifax; T. Briggs, Bury; A. Brookes, Pilkington; W. Brookes; W. Broughton, Leeds; G. W. Carter, Keighley; J. S. Carter, Bradford; H. J. Cartwright, Wolverhampton; C. Challinor, Pendlebury; A. H. Darwell, Northwich; J. Donald, Wigton; W. A. Edgar, Dartford; C. W. Elam, Liverpool; J. C. Elphick, A.V.D.; E. W. Faulkner, Manchester; H. Ferguson, Warrington; J. H. Ferguson, Leeds; Dr. G. Fleming, P.V.S., A.V.D.; T. Fletcher, Sheffield; F. Garside, Disley; W. F. Greenhalgh, Leeds; J. Haslam, Manchester; T. H. Higgott, Bakewell; T. Hopkin, Manchester; J. Howell, Rochdale; G. Humphries, Manchester; H. Hunter, Newcastle; J. S. Hurndall, Liverpool; J. Ingram, Manchester; T. A. Killick, A.V.D.; J. Lambert, A.V.D.; A. Lawson, Manchester; J. Lawson, Manchester; H. G. Lepper, Aylesbury; W. Lewis, Crewe; W. E. Litt, Shrewsbury; S. Locke, Manchester; W. Lomas, Buxton; W. H. Longhurst, Hull; A. J. McCullum, Edinburgh; J. Mackinder, Peterboro'; James Martin, Nantwich; G. Gartside Mayor, Kirkham; Professor McCall, Glasgow; J. W. T. Moore, Birkenhead; C. Moir, Cardiff; E. Nuttall, Preston; H. Olver, Tamworth; O. Over, Rugby; J. A. Polding, Bury; W. Pritchard, London; J. H. Reynolds, Daventry; M. J. Roberts, Manchester; R. Roberts, Kendal; J. A. Rostrom, 2nd Life Guards; J. Rowe, London; B. H. Russell, Grantham; T. Runciman, Market Deeping; H. J. Simpson, Windsor; T. H. Simcocks, Drogheda; W. W. Smart, Newcastle-on-Tyne; B. Smith, Barnsley; H. Stanley, Birmingham; J. B. Taylor, Ashton-under-Lyne; P. Taylor, Manchester; W. A. Taylor, Manchester; H. Thompson, Aspatria; J. C. Toop, Knaresboro'; R. C. Tregger, Newcastle-under-Lyne; J. B. Unsworth, Market Drayton; Professor Walley, Edinburgh; P. Walker, Bradford; W. J. Welsby, Liverpool; A. Wilkinson, Ashton-under-Lyne; W. Whittle, Worsley; W. Wiggins, Market Harboro'; Professor Williams, Edinburgh; W. Woods, Sen., Wigan; W. Woods, Jun., Wigan; F. W. Wragg, *Treasurer;* J. B. Wolstenholme, Manchester, *Local Secretary;* and G. A. Banham, Cambridge, *General Secretary.*

There were also present as visitors :—Professors W. Lemont, M.B., and Tuson, F.C.S., and Messrs. W. Allison, W. Anderson, J. Barber, J. Barlow, J. W. Bennett, Jun., J. R. Blair, J. Bunnell, J. H. Carter, F. P. Carter, T. Coats, J. Colam, Secretary S.P.C.A.; L. Delacherois, J. L. Dixon, E. Dunn, G. Ellison, M. Fitzmaurice, L.R.C.S.; T. C. Fletcher, A. C. French, J. Fresham, J. McGavin, Galloway; J. Hall, W. Hall, O. Harper, H. C. Harrison, T. Harrison, A. J. Haslam, J. H. Hine, F. Holmes, W. Heelen, G. Humphries, S. Jackson, J. Kennedy, E. W. Killick, J. Laithwood, E. J. Lawson, A. Lawson, A. Leather, T. J. Lumprie, W. F. Martin, F.R.C.S.; J. Martin, T. Marriott, R. Maxfield, A. M. Michaelis, C. McLaren, M.D.; J. Murdock, A. New, — Packman, J. Paton, H. D. Pritchard, H. Race, R. Rimmer, R. Roberts, W. Smith, M.D.; J. W. Stickler, H. J. Urquhart,

Waarworth, P. M. Walker, J. M. Wilson, A.V.D.; J. Wright, jun.; T. Yarwood, T. P. Young.

Apologies for non-attendance were received from the following members:—Messrs. N. Almond, T. G. Bate, E. E. Bate, F. Blakeway, W. Bower, J. Burnett, Thos. Burrell, J. Cameron, W. S. Carless, J. Cheeseman, A.V.D.; C. Cunningham, F. Cupiss, D. Dudgeon, Wm. Duguid, H. Edgar, W. F. Garside, G. Goodacre, W. Graves, T. D. Gregory, M. Harpley, J. P. Heath, M. Hedley, O. Hills, S. G. Holmans, S. E. Holmans, E. A. Hollingham, J. C. James, H. Kidd, G. A. Lepper, T. H. Lewis, W. Longhurst, Fred. Low, E. Mellett, E. J. Mellett, G. B. Miller, E. Nettleship, F.R.C.S.; T. Olver, G. G. Oliver, J. D. Overed, J. Penberthy, J. Preston, W. Reekie, W. Roach, Professor W. Robertson, R. Rutherford, F. G. Samson, A. H. Santy, R. A. Stock, Page Wallis, G. Waters, W. Wilson; and also from W. Agnew, Esq., M.P.; Professor A. Gamgee, M.D., Professor A. W. Ward, and Professor W. C. Williamson, Owen's College; F. Headlam, Esq., and J. Makinson, Esq., Stipendiary Magistrates; and Professor Simonds.

FIRST DAY'S SITTING.

The PRESIDENT opened the second General Meeting of the Association by heartily welcoming its members and visitors to Manchester. Some business matters were then considered, a detailed account of which will be found presently.

The following Report was then received and adopted by the meeting. It had already been forwarded to every member of the Association; therefore it was taken as read.

REPORT OF NATIONAL VETERINARY ASSOCIATION FOR 1884, IN ACCORDANCE WITH RULE XLII.

Officers.

It will be remembered that the Officers of the Association were nominally elected at the General Meeting, held in London, on May 8th, 1883, as follows:—

President: Thomas Greaves, Esq., F.R.C.V.S.

Vice-Presidents: Messrs. Charles Hunting, South Hetton; J. Lawson, Manchester; H. Olver, Tamworth; T. H. Simcocks, Drogheda; W. A. Taylor, Manchester; Wm. Woods, Wigan.

The Council consists of the Presidents and Secretaries of the existing local Veterinary Medical Societies, the Principals of the Veterinary Schools, the Principal Veterinary Surgeon of the Army Veterinary Department, and six members of the profession.

The election of these latter gentlemen was delegated to the President and Vice-Presidents, who selected the following gentlemen by ballot:—Messrs. Thomas Briggs, Bury; Tedbar Hopkin, Manchester; Walter Lewis, Crewe; W. E. Litt, Shrewsbury; Peter Taylor, Manchester; and Wm. Whittle, Worsley.

The Treasurer, Mr. F. W. Wragg, London, and the *General Secretary*, Mr. G. A. Banham, Cambridge, were re-elected.

The Provisional Committee was also left to the Presidents and Vice-Presidents to elect. Each was, therefore, asked to propose gentlemen, and the requisite number, selected by ballot, are as follows:—

Provisional Committee.

Mr. A. Bain.
„ T. Briggs.
„ C. E. Challinor.
„ W. Dacre.
„ C. W. Elam.
„ E. Faulkner.
„ H. Ferguson.
„ T. Hopkin.
„ Jas. Howell.
„ J. S. Hurndall.
„ J. W. Ingram.
„ J. Lambert, A.V.D.
„ Alex. Lawson.
„ John Lawson.
Mr. Wm. Leather.
„ S. Locke.
„ J. W. T. Moore.
„ H. Olver.
„ Peter Taylor.
„ Wm. A. Taylor.
„ Wm. Whittle.
„ J. B. Wolstenholme.
„ Wm. Woods.
„ Wm. Woods, jun.
Dr. G. Fleming.
Mr. Thos. Greaves
„ F. W. Wragg
„ G. A. Banham
} *Ex-Officio.*

The President of the Association was selected Chairman, and Mr. J. B. Wolstenholme Local Secretary to the Committee.

The Provisional Committee held their first meeting in September, 1883, when the President announced that he had been in communication with Professor A. Gamgee, of the Victoria University, with the object of obtaining suitable premises for the meeting. He was pleased to say that the Professor had warmly interested himself on our behalf, and the authorities had very kindly placed the rooms of the University at our disposal towards the end of July. This offer was gladly accepted by the Committee.

It was decided that the meeting should last over two days. Four subjects were chosen for discussion, and the names of the essayists proposed for the Local Secretary to obtain their consent. At a subsequent meeting, gentlemen were appointed to open the discussions.

Professor Gamgee also kindly promised to give an interesting description of various modern instruments and appliances used in original research, which offer the Provisional Committee gladly accepted.

It was also resolved that space should be set apart for the display of New Inventions, Instruments, and Drugs used in Veterinary practice.

A letter has been received from one of our members asking whether he could send his views in writing upon the subject under discussion, if he were unable to attend the general meeting. An answer was sent to the effect that at present our rules would not admit of such a proceeding.

The date at which the General Meeting should be held was next considered, and July 22nd and 23rd fixed as the days, provided they did not clash with anything else which would be likely to prevent the members attending. With this view the General Secretary was instructed to write to the Secretaries of the R.C.V.S. and the principals of the Schools, to ascertain the date of the examinations, and to the President and Secretary of each Local Veterinary Medical Society, to find out the date of their meetings. It was, however, found that it would be more advisable to postpone our meeting to July 30th and 31st.

With a view to increasing the number of members, the Provisional Committee issued the following circular letter to every member of the veterinary profession who was not a member of the Association :—

Dear Sir,—The Provisional Committee of the above Association desire to call your attention to the fact that the next General Meeting will be held in the Victoria University (Owen's College), Manchester, on the 30th and 31st of July next, at 10.30 and 2.30 each day, where subjects of great practical importance to veterinary science will be brought before the meeting for

discussion. They are anxious the gathering should be as representative of the profession as possible; therefore, they would be glad if you will become a member, and give them the pleasure of your presence at the General Meeting. The Annual Subscription to the Association is 10s. 6d., and may be forwarded to either of the Secretaries.

The papers on the four subjects will be printed and circulated to the members of the Association at least a fortnight before the meeting, so that—at the meeting—the discussion may be opened at once, in the following order :—

FIRST DAY.

Subject I.—"Public Health as Affected by the Food Supply obtained from Animals." Written by Professor McCall. Discussion opened by Professor Walley, at 10.30 a.m.

Subject II.—"Epizoötic Aphtha" (Foot-and-mouth Disease). Written by Professor Williams. Discussion opened by Mr. T. H. Simcocks (Drogheda), at 2.30 p.m.

SECOND DAY.

Subject III.—"Influenza in the Horse." Written by Professor William Pritchard. Discussion opened by Mr. W. A. Edgar (Dartford), at 10.30 a.m.

Subject IV.—"Cruelty to Animals." Written by Mr. Thomas Briggs (Bury). Discussion opened by Professor Pritchard, at 2.30 p.m.

Professor Gamgee has also kindly promised to give an interesting description of various modern instruments and appliances used in original research.

Members and Visitors will be able to obtain Luncheon from 1 to 2 o'clock each day, on the premises.

Space will also be set apart for Exhibiting Instruments, Samples of Drugs, and New Inventions used in Veterinary Practice.

The Veterinary Surgeons residing in Lancashire will provide a Dinner at the Grand Hotel for all *Members* of the Association on the 1st day of meeting, at 6 p.m. Non-members wishing to join at this social repast may do so. Dinner tickets, 10s. 6d. each (wine optional).

Members of the profession, *not being Members of the Association*, can attend the meeting (as visitors) and join in the discussions, if they will send their names to either of the Secretaries, who will remit them a ticket of admission to the meeting.

An early reply is requested to facilitate the arrangements.—We are, sir, yours truly,

J. B. WOLSTENHOLME, 102, *Quay Street, Manchester.*
GEO. A. BANHAM, *Downing Street, Cambridge.*

The meeting has, in addition, been freely advertised in our journals, and noticed by the editors, also for four weeks advertised in the Manchester papers.

The Lancashire Veterinary Surgeons have kindly invited the members of the Association to dine with them during their visit to Manchester, and it is hoped that this generous courtesy will be fully appreciated by our members accepting their invitation. As many of our members may be accompanied by friends as visitors to the meeting, it was thought desirable to open this repast to them by paying 10s. 6d. each, thus obviating the necessity of their separating during the evening, which otherwise would have been the case had the visitors been excluded, and the members accepted the invitation.

New Local Societies.

We are glad to report that three new local societies have been started during the past year—viz., the Border Counties, the Royal Counties, and the Western Counties. The General Secretary took upon himself to communicate with each President and Secretary of these societies, asking them to bring our Association before their members, and, if possible, induce them to join and assist us. He is pleased to report that all answered favourably to the call.

Number of Members.

We are glad to report that the Association is steadily increasing its number of members. Last year the Association commenced with 175 members, five of whom have this year withdrawn their names, and three have been taken away by death. We have, however, 54 new members this year, so that our total number of members is now 221.

This is by no means what we think it should be in a profession of over 2,600 members, and the Council entreats each individual member to do his utmost to increase our number, and assist in any other way he can in promoting the objects of the Association.

Treasurer.

Financially, the Society is prospering, as will be seen from the balance sheet. In commencing such Associations, the expenses usually exceed the receipts, but we have been able to curtail the expenses, so that we have a very fair balance in hand to start with, without hindrance to the welfare of the Association.

President's Address.

GENTLEMEN,—The duty of delivering an inaugural address now devolves upon me. In the first place, permit me to thank you, and to say how deeply sensible I am of the great honour you have conferred upon me in electing me your President; and further, to express my very great gratification in seeing myself supported by so numerous and distinguished an assemblage of veterinary surgeons from all parts of the three kingdoms.

The National Veterinary Association is, in itself, an evidence of the progress our profession is making. It is the outcome of the various veterinary medical associations which have sprung up in various places of late years. This Association follows the same lines as the British Medical Association. It is a centre of power, and is intended to give an impetus in our profession that never existed before; a spirit is stirred within us, and we are resolved to aspire to a higher sphere of usefulness. The obtaining of our Act of Parliament recently, the obtaining of our Charter and our three supplementary charters, together with the suppression of ignorance and empiricism in our profession, are, each of them, great steps in the line of progress. Two things must be recorded to the honour of Manchester; the first is, that it stood in the very first rank of the cities that gave birth to these Veterinary Medical Associations, and now it is holding within its boundary this, the Second General Meeting of this Association.

Our great object is to study the nature of the diseases that affect our domestic animals; to obtain for our noble profession its proper place. This is our province, and our duty to try to awaken and concentrate the minds of our profession on great subjects, and to get a clearer and fuller knowledge of these diseases, and also the laws and conditions of their propagation. Oh, how often have I anxiously wished that the intellect of my profession could but evolve the grandest thoughts ever conceived on these subjects; that we could so strengthen and give force to our intuitive knowledge, as to put

Dr. NATIONAL VETERINARY ASSOCIATION—BALANCE SHEET FOR THE YEAR 1883-4. Cr.

1883.		£	s.	d.
May 10.—To 9 Annual Subscriptions, per	Mr. Elphick	4	14	6
Sept. 8. „ 5 „ „ „	Mr. Trigger	2	12	6
Oct. 1. „ 48 „ „ „	Mr. Penberthy . .	25	4	0
„ „ „ 48 „ „ „	Mr. Banham	25	4	0
„ „ „ 1 Life „ „	„	5	5	0
„ „ „ 1 „ „ „	Mr. Wragg.	5	5	0
„ 23. „ 9 Annual Subscriptions „	Mr. Wolstenholme	4	14	6
1884.				
Feb. 16. „ 6 „ „ „	Mr. Moon . .	3	3	0
May 1. „ 6 „ „ „	Mr. Banham	3	3	0
	£79	5	6	
To Balance brought down	£37	11	11	

	£	s.	d.
By Disbursements—Mr. Penberthy :—			
Postage	3	17	0
Stationery	0	6	7
Expenses of Room, Red Lion Square	0	7	6
„ „ Bacon's Hotel	0	14	0
„ „ Society of Arts	2	7	0
Warren Hall & Co.'s Account	4	8	9
Hazell, Watson, & Viney's Account	14	14	3
„ Disbursements—Mr. Banham :—			
Spalding's Account	0	11	6
Hazell, Watson, & Viney's Account	4	9	6
Stamps and Wrappers	5	4	0
Carriage of Parcels	0	8	0
Minus of Half Guineas	0	1	6
Scribbling Paper	0	2	6
Telegram and Carriage of Parcel	0	1	6
Twine	0	0	6
Travelling Expenses	1	0	0
„ Disbursements of Treasurer :—			
Wicke's Reporter	2	12	6
Journal	0	7	0
„ Balance	37	11	11
	£79	5	6

Audited and found correct,

July 10th, 1884.

EDW. S. SHAVE, Professor Roy. Vet. Coll.
T. G. CHESTERMAN, Leman Street, Whitechapel.

ourselves in possession of a power which would enable us to establish a means whereby those great scourges which occasionally decimate our flocks and our herds, shall become a thing of the past.

Had our knowledge been properly appreciated, and our advice been followed in the year 1865, at the very commencement of the Rinderpest scourge, millions of pounds would have been saved to the country. Our advice was not taken, although it was urged in words not deficient in force; other counsels prevailed. Medical practitioners and other amateurs were allowed to offer opinions and to give advice, all of which soon proved to be utterly futile; these false views, false knowledge, and false advice, completely ignored and overshadowed the sound opinion expressed by the veterinary profession, viz., *to stamp it out, as the only safe course to adopt;* but, in the meantime, this scourge spread like unto a raging fire throughout the length and breadth of the land. Had we then been as influential a body as we are now aspiring to become, our counsels would have been listened to by those in high authority, and the lives of tens of thousands of cattle would have been saved.

Science has already done much, and is every year doing more to minimise some form of danger by which we are surrounded. It is the peculiar and legitimate province, as well as the duty of the veterinary surgeon to follow, with scrupulous care, the teaching of science, and to observe how wisely it is leading us, and directing our attention to the means of *preventing disease* in our domestic animals by studying the laws of sanitation, the exclusion of septic germs, and by adopting the antiseptic treatment. The increased, and increasing knowledge derived from experience, the collective investigation of the nature of disease, together with the resources of the veterinary surgeon of the present day, is far in advance of the knowledge brought to bear upon disease by the medical science which was within the reach of our forefathers. We work by a light developed by experience, by science, by reason; we put in practice more gentle and more humane methods than they did, and with far greater success.

It appears to us that there never was a time when there was so great a necessity as now for veterinary surgeons to be "up and doing," to throw all their strength into their avocation, and to carry our knowledge to a point of perfection unknown before, to collect and circulate the results of intelligent close observation on the diseases of our domestic animals, to create in our profession more intellectual life, more vigour, more activity.

(*To be continued.*)

Obituary.

WE have to report the death of James Cowie, M.R.C.V.S., of Dulwich Common, who graduated so long ago as 1831. We believe Mr. Cowie never practised his profession, but pursued agriculture, with more or less success, in Scotland and England. Though not a practitioner, he nevertheless held the office in the Royal College of Veterinary Surgeons of Vice-President, Councilman, and examiner in the Scottish section of the Examining Board.

The death is also reported of M. J. Roberts, M.R.C.V.S., of Manchester, a graduate of 1870.

Mr. Carless died at his residence, Bridge Street, Worcester, on Monday, October 6th, 1884, between the hours of eleven and twelve, after a brief illness of five days.

Army Veterinary Department.

Gazette, October 24th.

The following Veterinary Surgeons to be Veterinary Surgeons First-class:—John P. Adams, Walter B. Spooner, Samuel Gellespie.

First-class Veterinary Surgeon Durrant has embarked for a tour of service in India.

Notes and News.

CATTLE PLAGUE IN HUNGARY.—The official return for the week ended October 4th shows eight animals remaining affected at the close of the week, on one farm in Kent, as against sixteen animals affected in the same farm at the close of the previous week. The cattle market at Pressburg, in Hungary, has been suspended for ten days, and large numbers of cattle have been placed under military surveillance, because an ox from Transylvania, on being killed, was found to have Cattle Plague. Cattle Plague has also broken out in the Russian province of Bessarabia. The Roumanian Government has surrounded the frontier by a military cordon. Transylvania and the County of Pressburg were on Saturday proclaimed in the Vienna *Official Gazette* to be infected with Cattle Plague, and consignments of animals from those places are forbidden to enter the Vienna market. The *Toronto Globe* states that: "Notwithstanding statements of Dr. M'Eachran that Pleuro-pneumonia prevails in the Western States, and, despite the proclamation in force against such proceedings, it seems that Montana cattle are being driven across the plains to Swift Current, and shipped eastward to St. Paul. This illegal traffic is winked at by the Department of Agriculture, though the danger of introducing the disease in Canada is very great; but, so long as Mr. J. H. Pope remains at the head of the Agriculture Department, no better can be expected."

NEUROTOMY.—In a very interesting paper, read by Veterinary Surgeon Very, before the United States Veterinary Medical Association at the meeting held recently in Cincinnati, on the operation of neurotomy on trotting-horses, we find the following observations:—"The operation of neurotomy has had many advocates and many opponents. Under some circumstances, particularly where relief from painful lameness is otherwise not to be obtained, it may be considered a humane and practical method of treatment. Other circumstances render it objectionable, even in incurable lamenesses. The conscientious practitioner will hesitate, and investigate closely, before deciding to operate in any case. Haphazard undertakings of this kind will lead to queer results, and to some very unwelcome and entirely unanticipated. There are some few operations of a harmless nature, like filing the molar teeth, which one might feel justified to undertake at the solicitation of an owner. I maintain, on the other hand, that it is unprofessional and vicious, as well as 'un-American,' to cut off the tail of a horse to conform to a foolish fashion, even at the request of a wealthy and influential patron. The operation of neurotomy certainly ought never to be performed except the judgment and conscience of the operator justifies it, and no respectable man would practise it for dealers in horses simply to make the animals more merchantable."

A YANKEE VERMIFUGE.—Report says that a dose of vermifuge was lately administered to a California trotting horse known as James H., which was supposed to be suffering from worms. The medicine brought away a snake sixteen inches in length and as thick as the butt of a riding whip. The horse has heretofore been vicious and ungovernable, having killed one man and seriously injured another. Since the departure of the snake James H. appears like a different animal.

HAY AS FOOD FOR LIVE STOCK.—Some experiments have been made as to the comparative value of good hay for stock. As to the result, it is estimated that 100 lb. of hay are equal to 275 lb. of green Indian corn; 400 lb. of green clover; 442 lb. of rye straw; 360 lb. of wheat straw; 164 lb. of oat straw; 180 lb. of barley straw; 153 lb. of pea straw; 200 lb. of buckwheat straw; 400 lb. of dried corn stalks; 175 lb. of raw potatoes; 504 lb. of turnips; 300 lb. of carrots; 54 lb. of rye; 46 lb. of wheat; 59 lb. of oats; 45 lb. of mixed peas and beans; 64 lb. of buckwheat; 57 lb. of Indian corn; 68 lb. of acorns; 105 lb. of wheat bran; 167 lb. of wheat, pea, and oat chaff; 179 lb. of mixed rye and barley; 59 lb. of linseed; and 339 lb. of mangel wurzel.

TUBERCULOSIS IN RABBITS.—It has been known for a considerable time that, in certain localities in New Zealand, Tuberculosis prevailed among rabbits, and to such an extent as to temporarily clear considerable areas of them. Precisely similar circumstances having been observed in some districts in Tasmania, the idea was suggested that an easy means had been discovered of extirpating the pests. Investigation there, conducted at the instigation of the officials charged with the administration of the Rabbit Act, established the identity of the disease with Tuberculosis, and the policy of turning at large extensively diseased rabbits, or rabbits inoculated with the virus from those already affected, was discussed in the columns of the *Witness*. In the beginning of this year, under instructions from the Government of New South Wales, Mr. Willows, a competent veterinary surgeon, proceeded to Tasmania, and on several infested areas there investigated the subject exhaustively. The conclusions he arrived at have lately been published, together with the details of his procedure, and these are in effect as follows:—100 rabbits were selected from an infected area; of these 46 were half to full-grown, the remaining 54 from three weeks old to half-grown. All were killed in the presence of Mr. Willows, who made the *post-mortem* examinations. Of the 46, 11 were not in any way infected, 28 were in the first stage of the disease, and 7 in the second and third stages. Of the 54 young rabbits, in 13 there was no appearance of disease; 11 were in the first, and 30 in the second and third stages. Unless when in the most advanced stage, when the bodies were much wasted, there were no external appearances to evidence disease. When the disease had made much progress, the lungs were greatly wasted, pale, and flaccid. In the first stage, on opening the abdominal cavity indications of the disease were apparent in numerous tubercular depositions. When in the second stages, the liver had numerous enlargements of a greyish-yellow tint, and the mesenteric glands were affected. After a most careful examination of every case, Mr. Willows declares that the *post mortem* appearances "indubitably confirmed the existence of Tuberculosis." Mr. Willows further arrived at the conclusion that the disease is hereditary and transmissible. It is slowly but surely clearing whole districts in Tasmania of rabbits, and if not allowed to die out, will eventually exterminate them all over the island. He also assumes to have established a connection with the appearance of Tuberculosis in rabbits and the cattle disease, that bovine Scrofula caused the rabbit disease.

THE INFUSION OF A SALT SOLUTION AFTER LOSS OF BLOOD.—At a recent meeting of the Physiological Society of Berlin, Prof. Kronecker spoke of a

series of precautionary measures to be observed in cases of saving life by an infusion of common salt solution. He first described how animals after severe loss of blood recovered in the best and most rapid manner by introducing into their blood channels a like quantity of physiological common salt solution. In the case of infusions of albuminous solutions, of serum sanguinis, and even of the blood of another individual of the same species deprived of its fibrin, there was, according to direct measurements, an invariable destruction of blood corpuscles. With infusions of common salt solution, on the other hand, blood corpuscles were seen to increase somewhat rapidly. Prof. Kronecker then proceeded more particularly to lay down precautionary rules to be observed in applying this agency to man. In the first place, the composition of the solution must be such as was most compatible with the human organism. It would appear that a solution of 0·73 per cent. exercised the least irritation on the human body, and was therefore the most appropriate for infusions designed to save life. The addition of carbonate of alkali, recommended by some, had an injurious effect. Of great importance were the velocity and pressure with which the infusion was injected; both ought to correspond with the velocity and pressure in the vein into which the solution entered. The common salt solution should, further, be disinfected beforehand by boiling, and the air which penetrated into the reservoir while it was being emptied must be filtered off by means of a wadding stopper. The injurious effect of too strong pressure was illustrated by a comparative experiment on two rabbits.

TEXAS FEVER IN AMERICAN CATTLE.—*The Breeders' Gazette* (Chicago) makes the following remarks on the outbreaks of Texas Fever in Chicago:—One of the most alarming and fatal outbreaks of Texas Fever that we have had for years is now confronting the cattle-dealers all along the line from Topeka to Chicago. One hundred and twenty deaths, out of a lot of 375 head, shipped from Indian Territory, through Kansas City, was the record at the Chicago Stock Yards last Monday, as reported by the daily papers of this city. More of the same sort came on Tuesday, and more deaths were reported. News of a similar import of deaths in the cars, and of cattle switched off and quarantined at Topeka, Kansas City, and elsewhere along the railroads toward Chicago, comes by telegraph. The Commission men at the Chicago Stock Yards who succeeded in having the Animal Industry Act, which passed Congress last spring, declare that the Texas Fever was not a contagious or infectious disease within the meaning of the Act, are now seeing the fruits of their labour in the absence of any law whatever, State or National, by which a quarantine can be enforced against this fatal cattle scourge in the State of Illinois; and the railroad companies can dump their infected and dying cattle into our stock yards, and reload with others without even so much as an attempt at disinfecting a single car. Storrs, Allerton, Morris and Co. have done their work well, and the cattlemen at our stock yards and to the south-west of us are reaping the fruits of the labour of these men at Washington last year. We have the old stereotyped cry that it is not Texas Fever, and not contagious and infectious—"nothing but the effects of drinking too much alkali water," or "eating ticks from Texas cattle," or "bloody Murrain," etc. And we shall probably soon hear the old stereotyped lie that "there are no contagious or infectious diseases among the cattle of this country"; that "our cattle are the healthiest in the world," etc. But that it *is* the Texas Fever, and that it *is* infectious and deadly, all old stockmen and all experienced veterinarians know only too well. The Live Stock Exchange and the Stock Yards Company are doing all they can do in the absence of any law upon the subject to enforce a quarantine against the infected cattle and to prevent further damage; but the seeds of infection have already been extensively sown, which

will continue to do their deadly work until the frosts of next November or December shall have destroyed their vitality.

SWINE PLAGUE IN THE UNITED STATES.—A good deal of uneasiness has lately prevailed with regard to the sanitary condition of Washington, more particularly with respect to its supply of water. The Potomac is the primary source naturally, and some years ago an aqueduct was constructed, at a cost of many million dollars, to bring the water from the great falls of that river, about eighteen miles distant, to the western boundary of Georgetown, where the navigation ends, with suitable reservoirs at different intervals. The remoter sections of the city, however, have long been complaining of an insufficient supply, and it has therefore been determined to spend another two million dollars in making a tunnel, which shall convey the water from the reservoir underneath Rock Creek to the elevation in the neighbourhood of the Howard University. This would have been all very well as far as it went, had not a new danger threatened the water supply where it was least expected. Above the Potomac, where the aqueduct receives its water, the country is agricultural and very sparsely settled, possessing no manufactures of any kind, and it was thought that no pollution could by any possibility arise in such a district. For some weeks past, however, hog cholera has prevailed very extensively in those counties of Maryland and Virginia bordering the Potomac between the great falls and Harper's Ferry. Instead of burying the carcases of the poisoned hogs, the farmers have chosen the most simple way of flinging them into the river; and the health officer of the City of Washington states that in one stretch of water, close to where the city supply is taken, at least a thousand cholera hogs are floating about in the river. The worst of it is that no law exists to prevent the continuance of such a dangerous nuisance, and even should the Maryland farmers be persuaded to bury their dead hogs, it will be a long time before the pollution of a thousand carcases disappears from a tidal river.

DISEASE AMONG DOGS IN MADRAS.—A fatal disease has broken out amongst the fox-hounds of the Ooty hunt. Twenty-three dogs have died up to date, and the loss is estimated at nearly Rs. 4,000. This, of course, has put an end to sport for the season. Mr. Mills, Inspector of C. Division, was called in, while at Ooty, to investigate the matter, and he is of opinion that the outbreak is due to a virulent form of Enteric Fever.

Correspondence.

HOW ARE COUNTRY VETERINARY SURGEONS TO GET A LIVING?

SIR,—The remarks of a "Country Vet." in your last issue are much to the point, but hardly long enough. What with quack medicine vendors, registered practitioners, and, lastly, Professor Brown's scheme, the above question may well be asked. This scheme consists, as we well know, of the publishing of a pamphlet on the "Domestic Treatment of the Animals of the Farm," in which farmers who are members of the Royal Agricultural Society are enabled to read the symptoms and treatment, and obtain the medicines from a district veterinary surgeon, appointed by the R.A.S., or from an ordinary chemist, or what is more likely, in the form of the "Farmer's Medicine Chest" *à la* Professor Brown, as now advertised by many medicine-vending firms in the agricultural journals. In the two latter instances the ap-

pointed local veterinary surgeon even will not get much profit from his appointment. But the neighbours of the man appointed will get on even worse than he. As in the pamphlet symptoms are discussed as well as treatment, no doubt the farmer will in many cases himself diagnose, and unless he gets in a fog, will not call a veterinary surgeon, who, when he does call, will be expected to prescrise medicines from the pharmacopœia of Professor Brown's pamphlet, which medicines the farmer, no doubt, will have in stock; thus the veterinary surgeon loses any profit that can be got from medicines, which, in many cases, is all that can be got at all. One would think that Professor Brown would be the last person in the world to stoop to gain popularity in the agricultural world by such a miserable, mean plan. He holds two very high positions in the veterinary world, viz., those of chief veterinary surgeon to the Privy Council, and professor of the diseases of the domesticated animals other than the horse at the London veterinary school. In the first office, we had proof about a year ago of the watchfulness he exercises over the interests of members of our profession when the Privy Council issued an order empowering the election of registered practitioners as veterinary inspectors, a post before open only to M.R.C.V.S. When the Council were going to question him about it at a meeting he did not turn up. In the second office he holds, young veterinary surgeons have still more cause to complain, and if pupils at Camden Town relied only on the efforts of Professor Brown to enable them to pass the examination of the R.C.V.S., I am afraid they would have a miserable failure. His labours are confined to giving two lectures a week throughout the academical year, and he takes no part in the practical demonstrations given by the other members of the staff of the College. These demonstrations, and especially those given by Professor Robertson, take the form of what are known to students as "grinds." As to their superiority over Professor Brown's lectures, no student would hesitate a moment in saying that one of Professor Robertson's "grinds" was worth several of Professor Brown's lectures.

Following is the list of lectures as taken from the syllabus of the Royal Veterinary College.

[*Copy.*]

"PATHOLOGY IN RELATION TO THE ANIMALS OF THE FARM, EXCEPTING THE HORSE.

"*Winter Session*, 1883-4.

"PROFESSOR G. T. BROWN.

"The Lectures commence in October, and extend throughout the Winter and Summer Sessions.

"Importance of Veterinary Medicine and Surgery in its Application to the Diseases of Live Stock of the Farm—Number of Live Stock in this Country—Losses from Disease—Animal Plagues—Sanitary Police Measures—International Laws relating to Cattle Traffic—Necessity for more Constant and Systematic Interchange of Views between Continental and English Veterinarians—Differences in the Positions of the Animals of the Farm in Regard to Occupation, Exposure to Climatic Changes, and Diet.

"Investigation of Outbreaks of Diseases, an Important Duty of the Veterinary Surgeon.

"*Methods of Inquiry.*—Critical Examination of the Circumstances under which an Outbreak of Disease Occurs—Atmospheric Conditions—Soil—Nature of Herbage—Water-supply.

"*Classification of Diseases.*—No Complete System of Classification of

Diseases Available—A Convenient Arrangement is the one which includes in one Class all true Contagia, and in another all Diseases of Organs, as those of the Locomotory, Respiratory, Circulatory, Digestive, Integumental, Nervous, Urinary, and Generative Systems.

"*Contagious Diseases.*—Contagium—Infective as Distinct from Infectious—Normal and Infective Inflammations—Septic Poisoning—Germs not always Detectable by the Microscope—Test by Cultivation in a Sterilized Fluid, or by Tyndall's Method of Illumination.

"*Anthrax.*—History of the *Bacillus Anthracis*—Cultivation under Different Conditions—Pasteur's Investigations—Dr. Klein's Inquiries—Danger of Introducing Anthrax into this Country by Experimental Inoculation.

"*Symptomatic Anthrax.*—Bacteria in Tissues and not in Blood (Bouley), Texan Fever in Relation to Anthrax—Peculiar Form of Infection in Texan Fever—Localization of the Disease—Appearance in Certain Latitudes.

"*Cattle Plague.*—Early History of Animal Plagues in Europe in Third, Sixth, and Ninth Centuries—Cattle Plague on the Continent—Extension to England in 1224—Other Outbreaks in England in 1348, 1714, 1745, 1865—History of the Revel Cargo in 1865—Extensive Spreading of Disease in England—Royal Commission on Cattle Plague in 1865—Outbreak in Ireland, 1866—Subsequent Outbreaks of Cattle Plague in England in 1872 and 1877—Application of the "Stamping-out" System and Extirpation of the Disease.

"*Pleuro-pneumonia.*—Prevalence of the Disease on the Continent before its Appearance in this Kingdom—Introduction into Ireland in 1840—Appearance in London in 1842—History of the Progress of the Disease—Legislation in 1869 and 1878.

"*Tuberculosis* (*Bovine*).—References to the Various Phases in the History of Tubercle—Scrofulous Diathesis—Structure and Metamorphosis of Tubercle—Bovine Tuberculosis in Connection with Consumption of Man—Symptoms and *Post-mortem* Appearances of Tubercle.

"*Foot-and-mouth Disease.*—Introduction into England in 1839—History of the Disease—Periodical Accession and Decline—Legislation—Contagious Foot-rot Compared with Foot-and-mouth Disease.

"*Sheep-pox.*—History—Existence of the Disease on the Continent—Introduction into England in 1847, 1865, 1866—Symptoms and *Post-mortem* Appearances—Legislation.

"*Sheep Scab.*—Mode of Detecting the Acarus—Forms of Treatment—Legislation.

"*Swine Fever.*—History—Extensive Spreading of the Disease in 1862 to 1864—Pathology—Symptoms and *Post-mortem* Appearances—Legislation.

"*Distemper in Dogs.*—Various Stages of the Disease—Symptoms—Complications—Treatment—Vaccination as a Preventative of Distemper.

"*Rabies.*—History—Geographical Distribution—Causes—Symptoms in the Horse, Ox, Sheep, and Pig—Pasteur's Observations on the Localisation of the Virus in the Nerve Centres—Legislation—Prevention.

"*Non-contagious Diseases.*—This part of the course will include a description of the diseases affecting the various organs of the body in the ox, sheep, and pig, chiefly in reference to the forms of disease which affect those animals specially. Parasitic diseases are not treated under this section, as they form part of a different course.

"*Organs of Locomotion.*—Suppurative Arthritis (Special Form in Lambs)—'Foot Foul' (Ox)—Onychia (Foot-rot—Sheep).

"*Digestive System.*—Dentition as Indicating Age—Diseases of the Teeth—Aphtha Maligna — Glossitis — Gloss — Anthrax — Actinomycosis — Choking—Dilatation of the Œsophagus, Associated with Morbid Growths from the Lining Membrane—Stricture—Tympanitis—Plenaloia—Impacted Oma-

sum—Omasitis—Gastritis—Red Water in Cattle—Hepatitis—Jaundice—Sheep-rot in Reference to its Effects on Sheep-farming.

"*Respiratory System.* — Catarrh—Laryngitis—Bronchitis—Congestion—Pneumonia—Pleuritis—Pulmonary Emphysema.

"*Circulatory System.*—Pericarditis—Fatty Heart—Foreign Substance in Heart—Hypertrophy.

"*Nervous System—Organs of Vision.* — Ophthalmia — Glaucoma — Amaurosis—Cataract—Staphyloma.

"*Integumental System.*—Eczema—Ecthyma in Sheep—Erythema—Otorrhœa (Canker in the Ear).

"*Urinary System.*—Hæmaturia—Strangury from Obstructed Urethra (Sheep)—Calculi.

"*Generative System.*—Principles of Breeding—Utero-Gestation—Abortion—Premature Labour—Natural Labour—Surgery of Parturition—Complications Affecting Mother or Offspring—Preternatural Presentations—*Lusus Naturæ*—Uterine Hæmorrhage—Spasms (after Pains)—Hysteritis—Uterine Dropsy—Prolapsus Uteri—Retention of Fœtal Membranes—Parturient Apoplexy—Mammitis—Mammary Hæmorrhage—Stricture of Milk-ducts."

This, no doubt, seems rather lengthy, but many diseases are absent from it, and more are forgotten by Professor Brown when he is lecturing. Small matters are often left out, and the student is very often asked these small matters when he is examined. This is more particularly the case in the course on non-contagious diseases. In the course on contagious diseases, Professor Brown pays far too much attention to the early history of diseases and legislative matter. These are no doubt useful, but should not symptoms and *post-mortem* appearances be paid more attention to in lecturing to young men? They can read how Cattle Plague was brought by the Revel Cargo, and, I dare say, they would not benefit by the knowledge of facts as they occurred at Mrs. Nicholls' dairy. These and many other little anecdotes help to relieve the monotony of the time during which Professor Brown lectures.

From these facts I think I have proved that Professor Brown, after being paid to teach students, does so in a very imperfect manner, and then only to deprive them by means of this pamphlet (which, I hope, is not "the forthcoming work on 'Veterinary Therapeutics,' by Professor George Brown," mentioned by Professor Tuson in the preface to the first edition of his "Pharmacopœia," issued in 1869) of their just profits. If Professor Brown does not want to lose the very small amount of confidence placed in him by the profession (as evidenced by the very bare manner in which he was elected a Councilman last May), he would do well to stop this petty method of gaining the goodwill of farmers. Trusting you will excuse the space I have taken, but with good views, I am, sir, your obedient servant,

"A LATE LONDON STUDENT."

CONTAGIOUS LUNG PLAGUE IN ILLINOIS.

SIR,—Long before this reaches you the telegraphic reports of the outbreak of what is supposed to be Pleuro-pneumonia in several herds of Jersey cattle, in the State of Illinois, will have been received. This is the first appearance of the dread malady west of the Alleghany Mountains, and the history of the communication of the contagion, so far as it is now known, develops some remarkable peculiarities. It is supposed to have been taken to Illinois either from the City of Washington, where it has existed for several years, or from a herd of imported Jersey cattle in the western part of this State. The owner of this latter herd admits the death of several animals during the latter part of winter, but insists that the disease could not have been Pleuro-pneumonia,

because his cattle, being imported, had passed through quarantine. The occupier of an adjoining farm (only a highway intervening) has a herd of three or four hundred imported Holsteins, in which it is said there have been no indications of Pleuro. If this is true, and if the disease in the Jersey herd was the real contagious Lung Plague, the case furnishes very strong evidence in confirmation of the conclusions of the Veterinary Department of the Privy Council—to wit, that this disease can only be transmitted by cohabitation of sick with healthy animals. And the circumstances attending the outbreaks at different points in Illinois justify the same inference.

Mr. Epler, of Cass County, Illinois, held a sale of Jersey cattle on Feb. 21st last. Some of the animals in this sale had been bought for the States east, by way of Indianapolis, but there is no intelligence of the infection being communicated from the cars conveying these cattle, or the premises in which they were kept; while in all the diseased herds, animals have been found that were purchased at the Epler sale, or had been in contact with them.

I do not understand why it is, in view of the care with which the experiments of the Veterinary Department of the Privy Council were made, and the high professional standing of the gentlemen conducting them, the results of those experiments are not accepted as conclusive. But instead of this, we have Mr. Paaren, official veterinarian of Illinois, issuing orders to quarantine all premises upon which diseased animals have been kept, and to prevent "all visitors to such premises from having access to the stables and to the cattle, whether these are diseased or apparently healthy." And this is assumed to be necessary to prevent the dissemination of the contagion. Is not the evidence overwhelming that Pleuro-pneumonia is not of the infectious character here assumed?

In view of these outbreaks, and the alarm occasioned by the appearance of the Foot-and-Mouth disease near quarantine stations in the State of Maine last year—for this disease, it is admitted, does infect premises, litter, &c., and may, therefore, be communicated without cohabitation—is it strange that our people are clamouring to put a stop to the importation of cattle from Europe? You do not allow us to send cattle to Great Britain, unless we slaughter them at the landing, and we are not permitted to send them to your American provinces, while our markets are open to these provinces, without restriction.

The chief of the National Bureau of Animal Industry is now in Ohio to examine the Jersey herd, from which it is supposed animals were sent to the Epler sale.

T. C. JONES.

Delaware, Ohio, *Sep.* 1*st.*

AN EXPLANATION.

DEAR SIR,—Will you oblige me by inserting the following in your pages. My remarks on the feeding of horses of the Royal Artillery at Secunderabad, must be taken to refer only to the time I was stationed there, up till when I wrote the article in which they appeared. Since then there have been numerous and considerable changes in the regulations with regard to feeding horses in the Madras Presidency, which must tend to the benefit of the service and to lessen the prevalence of Liver Congestion among the Army horses. When I mentioned the "authorities" in connection with this matter I of course, was indulging in no reference to individuals, but simply intended to convey what I stated, *i.e.*, that I had duly represented my views on this matter through the usual channel. I am glad to say that if we may judge from the modification in the Feeding Regulations, my views closely agree with those of the modifiers of those regulations, whoever they be. (Reference to your volume, xviii. p. 28).—Yours very sincerely,

Bangalore, *Sept.* 13*th.* JOHN HENRY STEEL, V.S., A.V.D.

"PROFESSIONAL ADVERTISING."

SIR,—Under the above heading, in the VETERINARY JOURNAL for the present month, you give place to a paragraph taken from some local paper puffing a member of the profession.

Being in the town of Sheffield lately, I found my way to the theatre, and, paying a penny for a programme of the night's performance, I was not a little surprised to find in this said programme the following advertisement :—

NELSON & FLETCHER,

VETERINARY SURGEONS

(Members of the Royal College of Veterinary Surgeons),

ELLIN STREET, MOOR, SHEFFIELD.

Special attention paid to Diseases of Dogs.

Medicines Supplied upon Application by Post or otherwise.

INFIRMARY FOR HORSES AND DOGS.

Surely, Mr. Editor, we are not reduced to this extremity! What would be thought of any member of the medical profession who adopted such a practice? And yet many of us are struggling to take our place by their side, and to rank socially with them.

> "The fault, dear Brutus, is not in our stars,
> But in ourselves that we are underlings."

Advertising on a theatre programme, and in company with the following :— "Buy Tyler's Boots," "Furnish on the Hire System," "Try Davy's Sausages," "For a splendid Twopenny Cigar go to——" etc., etc.

It is to be hoped that this is not a fair sample of the means my fellow-members of the Royal College of Veterinary Surgeons are required to adopt at Sheffield to eke out a living.—Yours, etc.,

A PROVINCIAL PRACTITIONER.

SIR,—I am glad to say that I am not responsible for the paragraph headed "A Successful Veterinary Surgeon," which "Etiquette" sends you, with his own caustic comments thereon, as my "advertisement." Until my attention was called to it, I did not know of the announcement which appeared as an item of "Local News," *not as an advertisement, and without my knowledge or desire.* "Etiquette" is inaccurate also in saying that the *same* paragraph or, as it pleases him to call it "advertisement," appeared in two local papers at Wrexham. He has been careful to send the more glaring one. At the same time he *quite* forgot to send you the advertisement, or professional announcement, from the same newspaper for which I *am* responsible. This I enclose for your perusal. I am sure you will agree there is nothing unprofessional or "degrading" about it.

If "Etiquette" has anything further to say, let him please disclose his name, and I will meet any charge he has to make fairly and openly. I have a strong suspicion that if he had signed himself "Petty Jealousy," the *nom de plume* would have been a more appropriate one.—Yours, etc.,

Wrexham, *8th October*, 1884. JOHN ROBERTS, M.R.C.V.S.

THE ROYAL COLLEGE FUND.

DEAR SIR,—With reference to the suggestion made by you in the editorial for September, for an annual subscription of ten shillings from each member of our profession, individually I shall be glad to subscribe that sum, or one guinea per annum, as may be required, as soon as the matter may be decided on, and the necessary arrangements made for the receipt of the subscriptions.—I am, dear sir, yours very truly,

Woolwich. JOHN B. W. SKOULDING, A.V.D.

NOTICE.—Pending the publication of the second and concluding part of Fleming's "Text Book of Operative Veterinary Surgery (Special Operations on Organs and their Appendages)," it is requested that the following corrections may be noted for the first part, recently issued:—page 14, line 12, for "one-third inch," read "one and one-third inch;" page 47, line 15, for "preventible," read "preventable;" page 69, line 26, for "admitting," read "administering;" page 72, line 8, for "arthrotme," read "arthrotom;" page 72, line 11, for "cachée," read "caché;" page 132, line 26, for "trunk," read "thumb;" page 138, line 23, for "inside," read "outside;" page 226, line 49, for "latter," read "former;" page 257, line 38, for "vessel," read "missile;" page 263, line 30, for "spheroidal," read "sphenoidal."

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from R. Dyer, Limerick; J. H. Steel, A.V.D., Madras; W. D. Gunn, A.V.D., Madras; A. W. Hill, London; Professor Walley, Edinburgh; J. B. Skoulding, A.V.D., Woolwich; A. E. Macgillivray, Banff; T. C. Jones, Ohio; P. Cagny, Paris; P. S. Abraham, Dublin; T. Greaves, Manchester; G. A. Banham, Cambridge; J. Lambert, A.V.D., Woolwich; P. R. Gordon, Queensland; E. A. Hollingham, Red Hill; F. Spencer, Wragby; E. Beddard, Wolverhampton; J. Roberts, Wrexham; W. R. Burke, A.V.D., India.

NEWSPAPERS: *Lahore Civil and Military Gazette; Indigo and Tea Planters' Gazette; Leeds Mercury; Times; Manchester Guardian; Broad Arrow.*

BOOKS AND PAMPHLETS: *H. Bouley*, La Nature Vivante de la Contagion; *M. E. Aureggio*, Recherches sur les Affections Farcino-Morveuses du Cheval et de l'homme; *J. M. Wehenkel*, Bulletin du Comité Consultatif pour les Affaires Relatives aux Epizooties; Resumé d'une Enquête sur la Propagatione des Affections Charbonneuses en Belgique; Bulletin de la Société Royale Protectrice des Animaux de Belgique; 'Srijks Veeartsenijschool de Utrecht; Programma der Lesson; Bulletin et Mémoires de la Société Centrale de Médecine Vétérinaire; Report of the United States Treasury Cattle Commission for the year 1883; *J. M. Wehenkel*, Compte Rendu du IV^e^ Congrès International de Médecine Vétérinaire; Report on Anthrax amongst the Horses at Bangalore; Cape of Good Hope, Report by the Colonial Veterinary Surgeon; *A. Liautard*, Animal Castration.

JOURNALS, ETC.: *Journal de Médecine Vétérinaire et Zootechnie; Medical Times and Gazette; La Presse Vétérinaire; Revue Vétérinaire; Clinica Veterinaria; Live Stock Journal; Repertorium für Thierheilkunde; L'Écho Vétérinaire; American Veterinary Review; Edinburgh Medical Journal; Recueil de Medecine Vétérinaire; Medical Press and Circular; Archives Vétérinaire; British Medical Journal; Lancet; Œsterreichische Vierteljahresschrift für Wissenschattliche Veterinärkunde; Der Thierarzt; Der Hufschmied; Wochenschrift für Thierheilkunde und Viehzucht; Quarterly Journal of Veterinary Science in India; Tidskrift för Veterinar-Medicin och Husdjursskötsel; The Practitioner; Animalia; Chicago Live Stock Journal; Animal World.*

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